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THE MANAGEMENT OF SOME COMPLICATIONS FOLLOWING ABDOMINAL OPERATIONS *

FRANK H. LAHEY, M.D.

BOSTON

Unexpected and, as a rule, preventable postoperative complications make up a large part of the mortality which follows deliberate operative procedures on persons in good general health and presumed to be reasonable surgical risks.

These complications are at least in a considerable measure avoidable and, having arisen, assume serious aspects in proportion to the lateness with which they are discovered and adequately treated.

Perhaps the simplest and least fatal but most annoying postoperative complication is wound infection, particularly in the clean undrained wounds. Explanations of postoperative fevers without obvious cause should be first sought in the wound itself, and in a large number of cases will be found to be due to localized accumulations, many of which can be cared for by early drainage without further involvement of the wound. A method which I have successfully employed to discover these small localized inflammatory areas early is, with sterile precautions, to pinch the entire wound between the thumb and forefinger, starting at the top of the incision, placing the thumb and forefinger on the skin well away from the wound so that when they are brought together the entire thickness of the wound is palpated. As this palpating process is carried out from the top to the bottom, any localized segment of inflammation stands out as more tender and often more indurated than that segment immediately above or below it. Under the most meticulous sterile precautions the wound edges over this segment may be separated and a small strip of rubber dam inserted into the center of the area. By this procedure the early discovery of such areas frequently prevents complete involvement of the wound.

The factors predisposing to wound infection other than gross soiling are small hematomas due to incomplete venous hemostasis, inclusion of large segments of tissue in ligatures, and incomplete exclusion of skin from the wound edges. I have entirely eliminated the employment of through and through strangulating stay sutures, with marked improvement in wound healing.

Associated with wound infection of a different type is another and much more serious postoperative complication, wound rupture. The separation of wound edges in wounds which are obviously infected and draining is not as serious a postoperative complication as is the late and complete separation of peritoneum, muscle and fascia with or without separation of skin. It has been my experience that the separation of wound edges in the obviously infected and draining wounds has been rarely associated with intestinal obstruction and almost never complicated by the partial evisceration which so frequently accompanies the late wound separation occurring without systemic or local evidences of inflammatory reaction. The late separation of abdominal wounds is a condition with which all operating surgeons occasionally must deal. It occurs as a rule from the seventh to the twelfth day; either there is a complete separation of all layers of the wound with the escape of intestinal loops through the wound onto the abdominal wall, or the skin wound appears intact, apparently healing by first intention, but with all layers beneath it having given way, being widely separated, and often with a loop of small intestine so adherent to it that kinking and intestinal obstruction result. Wound rupture has been most frequent in upper abdominal incisions, particularly at the upper level, where the transversalis muscle is so well developed.

All patients with late or persisting postoperative vomiting, or any obstructive symptoms, should have their wounds immediately investigated for the possibility of postoperative wound separation. There is, of course, no possibility of overlooking this complication in cases of separation with partial evisceration. However, in cases in which healing has gone on in the skin with complete separation of all structures beneath it, the condition is most deceptive. I have several times observed such wounds, which apparently were beautifully healed by first intention, dry and not reddened or swollen; yet all structures but the skin were entirely separated, with an obstructed loop of small intestine adherent in the wound just beneath the skin. It is in such cases that exploration of the wound with a probe through the small separations of the skin edges under strict asepsis will demonstrate the presence or absence of wound separation, together with loops of small bowel just beneath the healed skin wound.

It seems to me quite probable, at least in upper right and left transrectus incisions, that failure to approximate the split bellies of the rectus muscle may play some part in the production of this complication, by leaving a trough between the sutured rectus fascia above and the sutured peritoneum and transversalis muscle below, in which serum accumulates, becomes mildly infected, and serves to prevent the wound from healing in the inferior and superior layers of sutures, but not the skin layer.

The management of wound rupture with evisceration involves the return of the eviscerated intestines into the abdomen with as little manipulation as possible and the resuture of the wound.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 20, 1927.

In a great majority of instances, the bowel may be returned into the abdomen and the wound closed with through and through sutures under wide and thorough infiltration of the abdominal wall about the wound with local anesthesia. The disadvantage of a general anesthetic in this condition is the fact that the straining and deep breathing consequent to the induction of a general anesthetic frequently result in the evisceration of a greater number of intestinal loops, adding thus to the difficulty of returning them to the abdominal cavity without undue manipulation and trauma. The satisfactory healing of these wounds, which are mildly infected and usually without hernia, has always been a source of agreeable surprise and satisfaction to me.

When one considers the question of immediate postoperative intestinal obstruction, it must usually be in association with postoperative so-called adynamic ileus, and there are few postoperative questions which may be as difficult to settle as is that of whether or not persisting postoperative distention is due to a mechanical obstruction or a paralytic ileus.

Because of the length of the small intestine, its mobility with its long mesentery and perhaps, in some part, its relatively small caliber, a majority of the cases of postoperative intestinal obstruction will be found located in the small bowel. With the predominance of small intestine obstruction postoperatively, there are usually several distinguishing clinical features which serve to separate this lesion from that of paralytic ileus of nonmechanical origin. The abdominal distention accompanying small intestinal obstruction low in the ileum is low in the abdomen, usually with the upper abdomen flat; with obstruction higher in the ileum, the distention is obviously more marked on the left side. The distention of paralytic ileus is as a rule general and symmetrical, with no one area more distended than another. In patients with paralytic ileus, the distress is due to general distention without the localizing peristaltic cramps which so frequently characterize small intestine obstruction. When peristaltic cramps are present in adynamic or presumed paralytic ileus, if gas is not soon passed with enemas and other proper measures, one should suspect that the obstruction is mechanical and not true postoperative nonmechanical obstruction, and undertake measures to relieve it. When sufficient peristalsis has returned to the dilated intestinal loops to produce cramps, there presumably is mechanical obstruction if gas is not soon expelled.

High jejunal obstructions not infrequently occur as the result of jejunal loops becoming kinked and adherent to upper abdominal wounds, and do not result in any characteristic distention. Patients frequently, however, are able to sense high jejunal blockage, can tell by their feelings whether or not material passes partly through the obstructed loop or encounters complete blockage, and are often able to locate the level of obstruction quite accurately on the abdominal wall.

This discussion is not intended to include the late postoperative obstruction cases after the postoperative distention has gone down. These are the cases in which most commonly loops of small bowel have become adherent and kinked about postoperative appendical exudates, or to inflammatory areas following removal of infected pelvic viscera. There is little to confuse one in these usually quite frank cases. There is nothing more disturbing, however, unless one has had a considerable experience with the condition, than to watch a patient with marked and persisting postoperative distention, and wonder whether or not one should reoperate on such a patient, and if so, what operative procedure should be employed.

In general, exploratory secondary operations on patients with marked distention are most serious procedures and should be undertaken only after the most mature deliberation. Patients with marked abdominal distention are already shocked by the absorption of the toxic intestinal products, and will be further shocked by the necessary manipulation of the distended coils of bowel.

Cecostomy is of little value when the distention is paralytic in origin, since it drains only its locally adjacent segment of bowel of its gas and feces, and if there is mechanical obstruction in a great majority of cases it will be above this level, in the small intestine, and the cecostomy will be without value in relieving it.

As long as postoperative distention is not mechanically obstructive in origin, nonoperative measures to start the passage of gas may be reasonably persisted with up to approximately four days. It must be assumed at once that no definite time limit may be safely laid down and that there are many exceptions in both directions of time. Distentions persisting beyond that time without frankly evidencing mechanical obstruction will usually be found to be due to peritonitis or localized inflammatory accumulations.

In those cases in which doubt exists and an enterostomy is determined on for relief of a possible obstruction, or even for possible relief of distention, an incision high in the left hypochondrium with an enterostomy in a high loop of jejunum by the method of Witzel, bringing the catheter out through the omentum (Mayo), is the best procedure. If there is obstruction, the enterostomy will be above it, and if not, it is of greater value to drain even short loops of upper intestines of their very toxic contents than the lower ileum or colon of their contents.

A factor which is often lost sight of in prolonged paralytic ileus is the toxemia of the consequent obstruction. The blood chlorides are rapidly depleted, and there is a progressive rise in the nonprotein nitrogen and the carbon dioxide combining power of the blood. In addition to any operative procedures, all possible measures should be used to combat this toxemia with the intravenous administration of normal or slightly hypertonic salt solution combined with dextrose.

In discussing postoperative distention, I have stated that persisting distention not evidencing itself as mechanical in origin will frequently be found to be due to local inflammatory accumulations which eventually become intraperitoneal abscesses. Except for those cases of general peritonitis in which multiple intraperitoneal abscesses form, these accumulations are usually single and most frequently encountered after operations for acute appendicitis or other septic intraperitoneal lesions. My experience with this condition has led me to formulate certain convictions concerning their management, the first of which is that exploratory operations for suspected but undemonstrated inflammatory accumulations are distinctly dangerous procedures. Delay and observation will result in the eventual demonstration of the mass, and permit its safe and adequate drainage without danger of diffusion. No suspected postoperative intraperitoneal inflammatory lesion should be watched without daily rectal examinations, and when such an inflammatory exudate is found pointing in the rectum, no attempt to drain it through the rectum should be made until the mass has become satisfactorily fluctuant and localized. There has hardly

been a more satisfactory postoperative complication to deal with than those postappendectomy pelvic abscesses pointing in the rectum. The introduction of the points of a long pair of scissors through the wall of the rectum into the center of the abscess has resulted, as a rule, in complete drainage and relief without further manipulation. No drain can or need be inserted. Such complications as have arisen in connection with this condition have been due to loops of low ileum being caught in the pelvis and obstructed in the exudate rather than to difficulties with drainage of the abscess itself.

The term drainage is a very poor one, implying particularly when applied to the abdomen that intraperitoneal material is drained out, when such is not the primary principle of the procedure. The first effect of a drain is to produce water-tight adhesions immediately about it. This occurs, as was shown by Dr. Fred T. Murphy in a series of drainage experiments on cats, the results of which were published in 1905.[1] He showed that water-tight adhesions occurred closely about an intra-abdominal drain in about twenty-four hours with a gauze drain and in about forty-eight hours with rubber dam, rubber tubing or cigaret drains. It must be assumed, therefore, that any drain inserted into the peritoneal cavity is closely walled off in at least forty-eight hours, and that any discharge which comes out around the drain is from an abscess cavity already walled off into which the drain has been placed, or from an area limited to the very immediate region in contact with the drain or drains. Experimental proof of this fact was demonstrated by Dr. Murphy in cats by injecting colored solutions along drains at various intervals of time after their introduction, and investigating whether or not the colored solution was disseminated through the abdomen. As has been stated, at the end of from twenty-four to forty-eight hours' drainage with drains of various types, no solution escaped through the walling-off adhesions which formed immediately about the drain. From these experiments it is evident that drains are valuable when introduced into already formed and walled off intra-abdominal abscess cavities, when carried down to a point where a localized abscess may form, and as a means of producing a water-tight canal along which material may flow out as in such a necrosis of the cecal wall that a fecal fistula may result. It is also at once evident that the notion that the abdomen or any large part of it may be drained is futile.

With this conception of drainage in mind, I have for many years either not drained or have left drains undisturbed for seven days before removing them. Drains left in for twenty-four hours need never have been introduced, and those removed in from forty-eight to seventy-two hours if originally necessary are quite liable to permit the remaining sinus to collapse at the level of the abdominal wall, resulting in abscess formation in the lowest part of the drainage sinus, which would require secondary opening. The drainage sinus left after removal of drains on the seventh or eighth day is sufficiently rigid so that the sinus remains open and completely drains itself.

Postoperative hemorrhages, while not entirely avoidable, are in general a reflection on the technical accuracy of the operative procedure. There are few postoperative intra-abdominal hemorrhages today, except those associated with diminished coagulability, such as deep jaundice and those associated with septic processes, that could not have been avoided had the vessels been ligated with greater accuracy at the time of operation. There is little to be said regarding postoperative hemorrhages except that, when bleeding is the result of slough involving an arterial vessel, delay in exposing the infected region and ligating the trunk of the vessel in a healthy area is quite generally a waste of time and of the patient's vitality. Packs, pressure and sutures introduced within the infected area will quite often be followed by repeated hemorrhages, and ligation in continuity must then be done on a patient much the worse for repeated small hemorrhages.

Careful preoperative study and preparation of the patient with obstructive jaundice is amply repaid during the postoperative period. In addition to the improved immediate operative recovery, by virtue of careful preparation, the data secured by careful study are of inestimable value in anticipating potential postoperative complications. Briefly, three factors are of importance: (1) the extent of liver injury; (2) the presence and extent of renal impairment, and (3) the coagulation time.

The pressure on the liver cells of bile stasis due to the slow dilatation of the intrahepatic branches of the biliary tree in these cases results in definite depression of liver function. The mechanism is much the same as in renal impairment due to long continued, partial ureteral obstruction. There is nearly always a low grade cholangeitis in addition, and glycogen storage is inefficient. During the preoperative period this deficit must be met by the administration of large amounts of carbohydrate. The carbohydrate of the diet can be augmented by the addition of a teaspoonful of lactose to the various drinks supplied. I have found the daily intravenous infusion of dextrose in physiologic sodium chloride solution of great value. Besides furnishing dextrose in a manner readily utilizable, an abundance of fluid, at least 3,000 cc. in twenty-four hours, is supplied.

The postoperative continuation of treatment directed toward liver injury is even more important. The sudden release of pressure in the ducts brings about an edema of the cells in much the same manner as in the kidney after the abrupt emptying of a distended bladder. Especially must one be on one's guard for liver failure when at operation the so-called white bile has been found, and when the postoperative biliary drainage is copious in amount but of a clear watery character. Not until the biliary drainage assumes a normal character can one consider the liver function to be approaching normal.

The quantitative determination of the extent of the bilirubinemia as shown by the van den Bergh reaction or icterus index furnishes one with an accurate index of the extent of obstruction as well as its fluctuations. In addition, it may be taken as an index of liver function. Together with the bilirubin there is an accumulation in the blood stream of bile salts which undoubtedly accounts for a part of the usual "cholemia" syndrome. Unfortunately, there is, as yet, no accurate means of measuring the amount of retained bile salts in the blood.

The destructive effect of long continued bilirubinemia, and of the retained bile salts on the kidney tubules, makes imperative a careful estimation of renal function in every case. If it is low before operation, the choice of an anesthetic should be considered carefully. After operation, on the basis of suggestive preoperative data, one should be constantly on the watch for signs of the kidney failure which may accompany obstructive jaundice.

Reduction in the coagulation time to approximately normal limits before operation is of the greatest impor-

1. Murphy, F. T.: Boston M. & S. J., Jan. 12, 1905.

tance. If the coagulation time of the blood is reduced by calcium in vitro, one may be fairly confident that the intravenous administration of calcium chloride, together with large amounts of calcium lactate by mouth, will be effective. Three days of such a regimen generally suffices. Recently, Dr. R. L. Mason of our clinic has been employing parathyroid extract-Collip in doses of 20 units daily for three days before operation with good results. The series of cases thus treated is as yet too small to allow definite conclusions, but it would seem that this procedure has definite possibilities. The blood serum calcium level should be carefully checked daily to guard against a hypercalcemia. If the coagulation time cannot be brought to normal by these procedures, blood transfusion at the time of operation is definitely indicated. After operation, a careful check should be made on the coagulation time. This is of the utmost importance at the time of the removal of the drains. The ooze deep within the abdominal cavity initiated by this procedure is a definite danger.

Regarding the postoperative employment of transfusion, I have only two rules: (1) the time to do transfusion is when one begins to debate as to whether or not it should be done; and (2) a method should be used that, at least for the individual employing it, assures that the blood and all the blood is actually introduced into the circulation.

Hiccup, occurring in a patient convalescing from a serious abdominal operation, is not only a distressing symptom but when prolonged may so consume vitality that it becomes the deciding factor in the balance between recovery and death. During the past year I have had very gratifying results in the treatment of this condition by carbon dioxide inhalation. No special apparatus is required. A small funnel is attached to a tube leading to an ordinary tank of carbon dioxide. The valve on the tank is turned just far enough to give a distinct odor of the gas which emerges. The patient inhales the gas from the funnel until a mild hyperpnea results. The hiccup usually stops after eight or ten breaths. The hiccup may recur after an interval, when the procedure may be repeated. I have used combinations of carbon dioxide and oxygen but have not found that this mixture has any advantages over the undiluted carbon dioxide.

The high incidence of pulmonary complications following upper abdominal operative procedures is well known. Two factors appear to play an important part in this incidence. One sees by roentgen-ray examination after gallbladder operations especially, a definitely elevated diaphragm on the right side. A definite atelectasis must exist in that portion of the lung just above the elevated diaphragm. The second factor is the reduction in vital capacity which follows these upper abdominal operations and which is due, undoubtedly, to a voluntary effort to minimize pain by shallow breathing. Dr. L. F. Sise in our clinic has attempted to offset both these factors by inducing deep breathing by means of carbon dioxide inhalations. The same method of inhalation as described for the treatment of hiccup is used. The inhalations are begun on the afternoon of the operation and are given three times daily through the third postoperative day. Enough of the gas should be given at each inhalation to produce a definite hyperpnea, which usually takes from five to ten minutes. The procedure is not objectionable to patients, and we believe that it has a definite value as a prophylaxis against pulmonary complications.

Such a topic as the management of postoperative complications necessitates for me, at least, the reiteration of many trite and very commonplace statements. Those set down here may perhaps need lessened apology in that they are not drawn from anything but the bitter cup of distressing personal experiences and are presented, not to those who have trod similar disquieting paths in a considerable operative experience, but as possible helpful suggestions to the less mature who have yet to be baptized in the most harassing and worrisome phase of operative surgery—postoperative complications.

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PREVENTION AND TREATMENT OF POSTOPERATIVE COMPLICATIONS IN ABDOMINAL SURGERY*

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During recent years many investigations have been directed toward the prevention of postoperative complications, especially since preventive medicine has proved its value in the progressive lowering of the mortality of certain diseases such as typhoid, smallpox and diphtheria.

An analysis of the factors which are concerned in the causation of operative mortality shows that, by judicious care, a fatal termination might have been avoided in many instances. Of prime importance is the realization that the operative procedure is only one factor in the handling of a surgical case. If the other factors are esteemed to be of minor importance, complications will invariably ensue. Among the other factors the preoperative care is of prime significance, especially in cases of jaundice, of prostatic obstruction with elevated blood urea, and of gastric carcinoma with obstruction, vomiting, anemia and a low chloride content of the blood.

The postoperative course in any case is controlled by three factors: (1) the status of the patient (a good or bad risk); (2) the type of operation performed, and (3) the measures employed to prevent complications.

STATUS OF PATIENT

The class of abdominal cases most prone to postoperative complications, other conditions—i. e., the operative procedure and the general management of the case—being the same, includes elderly patients and infants, and patients who either are enfeebled by acute or chronic disease or are physically or nervously exhausted. This is especially true when the lowered vitality is due to the chronic involvement of a vital organ, as in cirrhosis of the liver with hepatic insufficiency, chronic pancreatitis, cerebral arteriosclerosis or nephritis. It is also true of the patient with a high blood pressure, diabetes, myocarditis or obesity; and it is not less true of the patient whose morale is broken from any cause. That is, the risk in any case is determined by the state of the physical energy, the condition of the dominant organs, and the general morale of the patient.

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* From the Cleveland Clinic.
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A young adult, with normal weight, whose blood and organs are sound and who possesses a fine morale, will undergo any of the routine abdominal operations, performed according to good standards, with slight risk. Unhappily, it is seldom that the individual who requires a major operation has these advantages, but what we wish to emphasize is that postoperative complications are largely a direct result of preoperative disease or deficiency.

TYPE OF OPERATION

The operative factors which must be considered in their relation to postoperative complications are: (*a*) the type of anesthesia, (*b*) the extent of the operation, and (*c*) the organs and tissues involved.

(*a*) *Anesthesia.*—The deleterious effects of inhalation anesthesia, of the lipoid solvent anesthetics in particular, have been established by extensive researches and by general clinical observations. Among the inhalation anesthetics nitrous oxide-oxygen is the least harmful, but because of its interference with oxidation, the length and degree of anesthesia should be reduced to a minimum. In fact, when chief reliance is placed on local and regional anesthesia, practically any abdominal operation can be performed without pushing the inhalation anesthesia beyond the stage of analgesia; while operations on the bladder, prostate and rectum may be satisfactorily performed under sacral anesthesia with procaine hydrochloride, often without any inhalation anesthetic, although nitrous oxide-oxygen should be used whenever it is indicated by the presence of apprehension or psychic strain. Gentle handling of the viscera does not cause distress, but tension on the mesenteric attachments produces immoderate pain, with associated mental fear and apprehension. When such tension cannot be avoided, therefore, analgesia should be induced, and the degree of anesthesia should be increased if necessary until pain and apprehension are overcome. The surgeon and the anesthetist alike should never forget for a moment that strain and fatigue in themselves alone are dangerous factors.

(*b*) *Extent of the Operation.*—As in the case of burns, the effect of an operation bears a direct relation to its extent. For example, resection of the stomach or of the large intestine bears a relation to simple appendectomy similar to the relation borne by a hip-joint amputation to amputation of the great toe.

(*c*) *Organs and Tissues Involved.*—Operations in the upper part of the abdomen, that is, on the common duct, the stomach or the duodenum, involve a region which is supplied by intricate nervous mechanisms. Indeed, the common duct lies within the territory of the abdominal brain—the celiac plexus and its connections—and the abdominal brain governs functions which are no less essential to life than are those of the brain itself.

On the other hand, operations on the pelvic organs, except the ovaries, involve organs which are vital for the next generation, not for this generation. In this region, therefore, even though the tissues are pulled, sponged and torn, or afflicted by gauze packing—manipulations equivalent to those of taxidermy—the patient, though suffering much pain, will survive. The pelvic organs, hardened through eons of time by the boisterous adventures of childbearing, are phylogenetically prepared for heavy surgical assaults. Enough physical assault may safely be expended on one fibroid to destroy a houseful of common duct or gallbladder cases. Nevertheless, in pelvic surgery, as in surgery of the more sensitive organs and tissues, gentle manipulation, the division of adhesions by sharp instead of blunt dissection, insures a smoother convalescence. One point that may be mentioned here in passing is that if instead of manually forcing the intestines upward and packing them away from the pelvis, one places the patient in the Trendelenburg position while the anesthetic is being administered, the sucking action of the diaphragm and the elevated position will mechanically bring the intestines out of the pelvis, and they may then be held in place by easily placed, moist tapes.

PREVENTIVE MEASURES AGAINST COMPLICATIONS

(*a*) *Prevention of Postoperative Pneumonia.*—Since the earliest days of surgery, postoperative pneumonia has been a dreaded complication; however, it can be avoided in the majority of cases by a careful examination of the chest before operation. This is made by a member of the resident staff, and if râles are present the operation is immediately canceled. Any unexplainable elevation of temperature is also sufficient to warrant the postponement of the operation; or if the patient has a premonition of an impending cold or if coryza is present, the operation is canceled. As a final precaution, each patient is seen by the resident surgeon on the morning of the operation to make sure that there has been no last-moment development of cold in the chest.

When an abdominal operation is to be performed on an old or debilitated patient, diathermy is applied to the base of the lungs and the liver during operation and every four hours during the day after operation—a measure which we believe is efficacious in preventing postoperative pulmonary complications. During the winter months, pneumonia jackets are worn from the time the patient enters the hospital until several days after operation.

(*b*) *Restoration of a Normal Water Balance.*—If the water intake is low and the output is decreased, saline infusions are given, sufficient procaine hydrochloride being added to make a one thirty-second per cent solution after Bartlett's method, a procedure which renders the infusion practically painless. By this means dehydration is overcome, the normal water content is restored to the cells of the body, and the removal or dilution of any toxins which may be present is promoted.

(*c*) *Cardiac or Renal Insufficiency.*—In such cases, when edema or ascites is present, the patient may be restored to a condition compatible with a major surgical procedure by the use of tincture of digitalis, absolute rest in bed, and merbaphen.

(*d*) *Intracellular Acidosis.*—In the presence of this complication in elderly patients with chronic nephritis and an elevated blood urea, a remarkable improvement may result from the intravenous administration of Fischer's solution (550 cc. twice a day) and of a 10 per cent solution of dextrose.

(*e*) *Jaundice and Hepatic Insufficiency.*—These conditions are frequently associated with disease of the gallbladder and common duct. In cases of this nature, in the past dreaded by the surgeon, operation is now performed without fear. Decreasing the clotting time by the daily intravenous administration of calcium chloride (5 cc. of a 10 per cent solution) and by blood transfusion has minimized the danger of hemorrhage; ultraviolet rays also have proved efficacious in diminishing the bleeding time in cases of jaundice. The

prevention of acidosis and the improvement of the patient's general condition by the intravenous administration of 500 cc. of a 10 per cent solution of dextrose twice daily has also lessened the fear of hepatic insufficiency.

(*f*) *Acute Surgical Shock and Acute Hemorrhage.*—These conditions are almost completely controlled by two obvious methods: (1) blood transfusion; (2) diathermy.

Blood Transfusion: The transfusion of whole blood is therapeutically the best and technically the simplest method. The blood of all patients is grouped as a matter of routine in order that a suitable donor may always be available during any major surgical procedure, thus occasionally preventing the catastrophe which might result in case of delay. Indirect matching (Moss) is sufficient in most cases, and a reaction is of rare occurrence; 500 cc. of blood is the usual amount and it is injected slowly. In patients with blood dyscrasia, Banti's disease and jaundice, direct matching should always be done, as occasionally, even when grouping by type has been carefully carried out, reaction may occur.

In cases in which the surgical procedure is prolonged, as in extensive resections, especially when the patients are debilitated, transfusion immediately after operation or even during the operation will prevent shock and its complicating sequelae. The transformation which is brought about by blood transfusion in suitable cases is one of the classic dramatic incidents of surgery.

Diathermy: Comparable to the dramatic effect of blood transfusion in suitable cases is the effect of diathermy. Why does diathermy play an important rôle, since it contributes only heat? Only heat! It must be remembered that animals are energy-transformers. One of the greatest, perhaps the greatest control of energy transformation is heat, for it is known that with each increase of 1 degree C. in temperature, the speed of chemical activity is changed 10 per cent. What stimulant, what drug has a metabolic effect in the least comparable to this? Even laying aside the obvious facts of physics, the manner in which the patient responds to the application of heat is most striking. In diathermy we have an ideal method for introducing heat into the body. As an emergency measure in the case of a patient whose energies are flagging, diathermy almost equals blood transfusion as a measure for temporary relief. Later we shall discuss diathermy as an important sustaining measure during certain abdominal operations.

(*g*) *The Promotion of Nervous and Physical Energy.*—To effect such a promotion of energy prior to operation is of especial importance in patients whose normal bodily energy has been depreciated by hemorrhage, chronic infection, the failure of organs, vomiting or diarrhea.

Alpine Lamp: In cases of chronic diseases causing emaciation and debility, such as anemia or chronic infection, especially tuberculosis, if operative procedures are not urgent the alpine lamp may be used to add energy. Alpine lamp treatments, diathermy and blood transfusions may be administered in the patient's room without occasioning him either discomfort or disturbance.

Insulin: Since the advent of insulin it has been possible to operate on patients with diabetes in whom formerly surgical procedures would have been contraindicated. All our patients who have diabetes are placed under the care of Dr. Henry John, the head of our diabetes department; he has complete supervision of the case from the diabetic standpoint and indicates when an operation is compatible with the diabetic condition. Since the advent of insulin no deaths which could be attributed to diabetes have followed operation.

Insulin is proving of value also in many cases in which there is a depression of physical and nervous energy due to want of food; e. g., cases of pyloric obstruction and of jaundice. In these cases dextrose may be administered intravenously, 2.5 Gm. of dextrose being allowed for each unit of insulin administered, thus increasing the amount of available glycogen.

Saline Infusions: In cases of dehydration, especially when it is due to intestinal obstruction, sodium chloride is perhaps as essential as water itself. One of the chief causes of death in cases of high obstruction is, of course, dehydration, and it has been shown experimentally by Orr and Haden [1] that in such cases there is a marked loss of chlorides, and also a constant rise in the nonprotein nitrogen and in the carbon dioxide combining power of the plasma. That sodium chloride plays a fundamental rôle in the operation of the organism has long been known, but the exact nature of that rôle has not been understood. It is hoped that more will be known regarding this in the near future.

Rest: One of the most important restorative measures is secured through exquisite tact and understanding on the part of the nurses and the staff, and by the administration of minimum amounts of sedatives; I refer to the greatest of all restorers, sleep and rest. The morning of operation should find the patient calm and quiet. He should certainly be allowed to sleep as late as is possible, and should never be awakened at an early hour to receive medicine or to have his temperature taken. Only an acute hemorrhage could justify the early awakening of a patient on the morning of an operation of serious risk.

THE OPERATION

Assuming that all the measures indicated by the nature of the individual case have been applied, that the patient has been taken to the operating room on a comfortable wheel-stretcher by an orderly whose mien does not take the cheer out of life, and that the patient has been placed on a table covered with a warm mattress, let us now consider how the operation can be managed in such a manner as to preserve the energy of the patient during the operation; for if the patient can be returned to his bed with his nervous and physical energy but little if at all impaired, his organism will then be able to resist the onset of any complication following operation.

Psychic strain must be eliminated. To this end the sensorium is first slightly blunted by the administration of a hypodermic injection of morphine before the patient is transported to the operating room. As soon as the patient has been placed on the operating table, analgesia should be instituted by a competent and sympathetic anesthetist. The influence of the personality of the anesthetist in the relief of mental strain is manifested in many cases. As we have said before, nitrous oxide-oxygen is the preferred inhalation anesthetic, and when an accurate abdominal block has been induced, relaxation can be secured without allowing the patient to pass beyond the state of analgesia. Another advan-

1. Orr, T. G., and Haden, R. L.: High Jejunostomy in Intestinal Obstruction: Clinical Review and Experimental Results, J. A. M. A. 87: 632-634 (Aug. 28) 1926.

tage of this type of anesthesia lies in the fact that if the anesthetic has been correctly administered, the patient will be perfectly clear mentally as soon as the operation is finished and can be immediately assured that the operation was successful.

Every unnecessary injury of tissue should be avoided. The mass ligation of vessels, or the application of large-toothed forceps to tissues, is not compatible with present-day surgery. Even though pain may not be experienced by the patient, the tissue is devitalized by such measures and its resistance to infection is lowered. Excluding those cases in which ileus is due to obstruction and peritonitis, the incidence of postoperative ileus bears a direct relation to the trauma of the viscera during the operation. Sharp dissection rather than blunt should always be employed. With adequate exposure and a thorough knowledge of the anatomic landmarks at the site of operation, sharp dissection is of inestimable value in the severing of adhesions and the identification of important structures. The use of moist sponges and gentle sponging of the bleeding points likewise reduces injury of the tissues to a minimum.

Loss of heat is prevented by the application of diathermy and by the protection of the viscera by means of large, warm, moist tapes. Viscera should never decorate the area adjacent to the operative field, but while exposed they should be covered with warm, moist tapes, and as soon as the necessary examination is completed they should be replaced in the abdomen.

The organization of an efficient operating team is one of the essential factors of modern surgery. As the result of the repetition of similar operations by the same team, each successive stage in the operation is anticipated and needless loss of time is eliminated. During the operation idle hands indicate an improper conception of the procedure, and the combined activities of all the members of the team constitute an efficient surgical unit.

Lack of attention to the apparently minor details—gentleness, accuracy, avoidance of trauma, maximum speed consistent with good technic in the conduct of the operation—leads to disastrous results; while due attention to these minor details will often, usually, in fact, change a poor or a fair to a good result.

Proper preparation and observant care should always leave the patient with good reserves of energy and, in consequence, good resistance against complications.

TREATMENT OF POSTOPERATIVE ABDOMINAL COMPLICATIONS

A few words may well be added regarding the prevention of certain specific complications which may follow abdominal operations, such as ileus, acute gastric dilatation, vomiting, peritonitis and hemorrhage.

Ileus.—The incidence of ileus may be minimized by gentle handling of the viscera. As we have already indicated, in most cases the patient may be expected to have a stormy convalescence if rough handling of tissue occurs during operation. If ileus does occur, however, an ileostomy should be performed early, without waiting until the patient's condition is critical. This procedure may be performed rapidly, under local anesthesia in the patient's room, without causing undue distress to the patient. Frequent infusions of physiologic sodium chloride solution to maintain the water balance and to lessen the absorption of toxins are of value. Transfusion also will aid in the maintenance of a better physical condition. Pituitary extract may be given if the obstruction is not mechanical in type, and likewise magnesium sulphate enemas.

Gastric Dilatation.—The occurrence of gastric dilatation has been practically eliminated. Gastric lavages are given before any gastric operation, and a soft diet is allowed until the day preceding the operation, when a liquid diet of high caloric value is given. On the morning of operation a gastric lavage is again given and a duodenal tube is passed. Here, again, gentle handling of the viscera and sharp dissection are valuable preventive measures.

After the operation the duodenal tube acts as a siphon and eliminates regurgitated bile and duodenal contents, and also blood which may have escaped into the stomach. An occasional flushing of the tube with warm water prevents mechanical stoppage. Adequate hemostasis by a hemostatic suture when the anastomosis is performed keeps the stomach free from blood.

The acute dilatation which is sometimes associated with arteriomesenteric obstruction may be treated by turning the patient on his side, or on the abdomen, if necessary. This removes the obstruction by freeing the duodenum from the tension of the mesentery. Early recognition of the condition and the repeated passage of the stomach tube will often relieve the condition. Pituitary extract may also be of value. Saline infusions should be administered to maintain the normal chloride content of the blood. By instituting these measures, and by clinically recognizing the condition early, a fatal outcome may be avoided.

Vomiting.—This is most effectively prevented or minimized by gastric lavage.

Hemorrhage.—In spite of every precaution, a gastric operation may be followed by hemorrhage, although in most cases the use of an interlocking hemostatic suture, the cobbler stitch, will prevent this complication. If bleeding occurs, transfusion may be necessary (in gastric cases), and a donor should always be available. If there is slight oozing, a gastric lavage with the water at a temperature of 120 F. may be necessary. If the hemorrhage is profuse, a secondary operation may have to be performed. In this case a small opening is made in the anterior wall of the stomach to expose the bleeding point in the line of anastomosis, a ligature is applied, and the opening in the stomach is closed.

Since the efficacy of calcium and dextrose in shortening the clotting time in cases of jaundice has been observed, the incidence of postoperative bleeding and of hepatic insufficiency has been considerably reduced. In cases of jaundice, the most exacting preoperative and postoperative management is necessary. The intravenous administration of from 500 to 1,000 cc. of a 10 per cent solution of dextrose with insulin is given daily before and after operation. Dextrose may also be given rectally, if it is tolerated, thus increasing the amount of available glycogen.

Transfusion and the administration of calcium will usually prevent hemorrhage in cases of jaundice. Five cubic centimeters of a 10 per cent solution of calcium chloride is given daily until the bleeding time is compatible with a major surgical procedure, and this medication is repeated after the operation. By all these measures the downward course, which in the past occasionally followed an operation on a jaundiced patient, can be avoided.

Peritonitis.—This condition may be avoided, or its course abated, by limiting the primary operation strictly to the procedure necessary to provide adequate depen-

dent drainage, and by the institution of the Alonzo Clark treatment with morphine; that is, the administration of morphine in sufficient doses to hold the respiratory rate to less than 18 per minute. The major operative procedure—the identification and removal of the focus of infection—may then be postponed until the stormy period is past.

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[EDITORIAL NOTE.—This paper, together with the paper by Dr. Lahey, which precedes it, and two papers, by Dr. Thalhimer and by Drs. Walters and Bollman, to appear next week, constitutes a symposium on abdominal surgery. The discussion will follow the papers to be published in our next issue.]

TRIGEMINAL NEURALGIA

FOURTEEN YEARS' EXPERIENCE WITH FRACTIONAL SECTION OF THE SENSORY ROOT AS THE MAJOR OPERATION *

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Of major trigeminal neuralgia or tic douloureux there would seem to be little to say that has not already been written, but there are many angles, many aspects of the disease that do not appear in current literature. In the neurosurgical clinic one gets the impression that the disease is commonplace. We have on our records some 794 cases of major neuralgia, not to speak of 202 cases of the atypical forms, and yet in the lifetime of the busiest practitioner not more than two or three cases, if any, will have been seen.

Major trigeminal neuralgia would seem, on the face of it, a clinical entity so unmistakable in its expression that it could not be confused with anything else. Perhaps in the majority of instances this is true, but judging from the number of patients referred to the neurosurgical clinic for alcoholic injection who do not require either injection or operation, many errors in observation are made. Confusion arises in connection with a group of otherwise unexplained painful conditions in the trigeminal zone, which for lack of knowledge as to their precise nature are ignorantly called "atypical neuralgia." In most instances, patients so affected have been subjected to various efforts at relief, perhaps the most common of which is drainage of the maxillary antrum; sometimes it is extraction of teeth, and sometimes attempted injections of the sphenopalatine ganglion; but whatever it may be one invariably finds on inquiry that after each of these successive attempts the patient is worse rather than better. I speak of these atypical neuralgias merely to call attention to the fact that the recognition of major trigeminal neuralgia seems to present difficulties. In most instances these difficulties should be easily overcome, but I acknowledge a limited number of cases in which differentiation, because of certain atypical features, may tax one's judgment and power of discrimination. A limited number of these may be relieved by the conventional procedures for the relief of major trigeminal neuralgia.

One cannot have had intimate contact with trigeminal neuralgia patients in any numbers without learning something of their reactions to pain. While it does not seem to throw any light on the etiology of the disease, it is a fact that the victims as a rule are persons, commonly called high strung, who do not bear up well under the wear and tear of life, who do not stand up well under responsibilities, and who fuss and fret more than the average under the little frictions of daily life. And dreadful as the pain is during the attacks, I have almost come to the conclusion that the apprehension of pain, the uncertainty as to when the next paroxysm or, during the quiescent intervals, as to when the next attack is coming on, wears the patient out and worries him as much as the pain itself.

These side lights and others which might be mentioned suffice to emphasize that there is very much more in the composite picture of trigeminal neuralgia than one would gather from reading the usual concise textbook description.

It is becoming a matter of common knowledge, with exceptions not too infrequent, that there are two and only two ways of giving relief to major trigeminal neuralgia. I shall not dwell on the indications for selecting an alcohol injection or the radical operation. When informed, as he should be, of the limitations of the one and the enduring effect of the other, the decision should be left to the patient. But invariably before the operation is performed the patient should be told that where there now is pain there will always be numbness. In cases of doubtful diagnosis this is of invaluable assistance, since the patient who does not suffer the intense pain of true tic douloureux shudders at the thought of having the face numb throughout life, and without further investigation one at once determines for oneself and for the patient the impropriety of the major operation. On the other hand, the victim of true major neuralgia accepts any alternative to pain cheerfully and without protest.

In 1925, for certain reasons, I proposed on the basis of ten years' experience, subtotal section of the sensory root as a substitute for complete section. At that time the proposal seemed venturesome, but since then repeated experience has more than justified the adoption of this modification of what once was recognized as the conventional and accepted radical procedure.

Since that time an investigative research into the phylogenetic and embryologic aspects of the sensory root and gasserian ganglion has added further supporting evidence. I need refer here only to two of the conclusions of this research: first, that there was reason for believing that the ganglion could be regarded as being composed of two units, rather than a single unit, the ophthalmic portion differing embryologically and clinically from the remaining two thirds of the ganglion; and secondly, that there were separate and distinct fibers or fasciculi in the sensory root for each of these three divisions of the ganglion, the mandibular, maxillary and ophthalmic.

When the original proposal was made, subtotal section of the sensory root implied section of the outer two thirds and conservation of the inner or ophthalmic portion. The primary purpose of this modification of the operation as generally practiced, when the whole root was sacrificed, was to avoid trophic keratitis. In my original contribution in 1925, I presented a series of cases in which, after subtotal section, not a single instance of keratitis developed.

But despite this evidence, and despite the fact that it had been demonstrated that the one annoying and disturbing complication of the major operation could be avoided, limited or subtotal section of the sensory root has not, so far as I know, been adopted in any other clinic, and it is for this reason that I venture to bring

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the matter to the attention of the profession again, so convinced am I of its practicability and its advantages. It is my purpose not only to urge again its adoption but to suggest a further application of the principle of fractional section of the sensory root.

I gather the impression that there are perhaps two reasons why neurosurgeons have not adopted this modification of the original Spiller operation; one is the assumed difficulty of execution, the other the fear of recurrence. As concerns the first, admittedly it requires more patience and a better exposure of the root than would be needed were one content, as in old times, to sacrifice the whole sensory root, and with it the motor root as well. But if, as I am convinced by experience, an adequate exposure of the root can be obtained without prolonging the operation more than a few moments and without adding anything to the risk of operation, certainly the advantages of conserving the ophthalmic portion of the root are of sufficient importance to the patient to warrant the effort.

Let me say just a few words about the exposure of the root. When the operation has advanced to the point where the middle meningeal artery has been divided and the foramen ovale approached, I would suggest that the eminentia articularis, if very prominent, be chiseled off flush with the floor of the skull. This is seemingly a minor matter, but any step in the conduct of the operation that gives a more direct and unobstructed view is always well worth while, and when this articular eminence juts up above the level of the skull, if only 3 or 4 mm., it obstructs the view of the foramen ovale. The latter lies in a depression, and to see it without removing the eminence the operator has to elevate the brain much more than would otherwise be necessary.

The operator then proceeds to uncover the ganglion, beginning just over the foramen ovale to separate the dura from the dura propria or ganglion sheath. Here I would further suggest that this separation be planned to uncover only the posterior half of the ganglion. There is no necessity for uncovering the ophthalmic portion, and a very good reason (to avoid injuring the dural sinus) why the separation should not be carried forward to the point where the second division is given off. This separation of the dura should be continued toward the apex of the petrous bone until at least 0.5 cm. of the sensory root with its arachnoid sheath is uncovered. In order to expose this much of the sensory root, the dura should not be separated in its entirety from the floor of the skull posterior to the ganglion. This is a point in the technic of very great importance for if the floor of the skull is completely bared in this region the petrosal nerve will be injured and a transitory facial paralysis may follow. With these precautions an adequate exposure of the sensory root may be obtained safely, and there remains now only to determine how much and what portion of the root is to be divided. Those who have performed this operation frequently realize that sensory roots do not all look alike. In some the fasciculi are very much more adherent to each other and to a thickened arachnoid as if, as I believe, enmeshed in an old inflammatory exudate. With a little practice at this juncture and a dry field, the several constituent parts of the root may be surveyed and as much of the root divided as indications demand.

These suggestions as to the exposure of the sensory root will, I hope, overcome the objections to the operation on the ground of technical difficulties. Now what of the other objection, fear of recurrence? It is well known that the ophthalmic portion of the trigeminal tract is almost immune, so seldom is the pain referred to that division. It has been said that in not more than 5 per cent in any large series will pain be referred to a branch of the ophthalmic division. My own records bear this out. But, and I wish to lay great emphasis on this point, if in this group are included only those cases in which the pain was referred to the ophthalmic division at the beginning, the percentage of first division involvement is much less. Granting this, the likelihood of recurrence or of later involvement of the ophthalmic portion of the sensory root is most remote and as a matter of fact, since this modification of the radical operation was adopted in 1915, I have never had an occasion to reoperate in a single case. As far as any fear of recurrence or of extension of the disease in the ophthalmic division is concerned, experience has proved the fear groundless. But the advantages, especially in persons in the active decades of life, of guaranteeing immunity against corneal complications were so outstanding that in the early period before the test of time could be used as an argument, after presenting the pros and cons, I found the patient always quite willing to take the chance of a possible second operation. Fortunately, this possibility has never materialized.

The time has come now, I believe, for a wider application of fractional or subtotal section of the sensory root. Emphasis has been laid on the differentiation of the primary and secondary involvement of the respective branches of the trigeminal tract. As time goes on, I am coming more and more to the belief that if in the early stage of the disease the pain can be controlled in the branch or division first involved, the patient will be permanently and entirely relieved. It is a matter of common knowledge that trigeminal neuralgia at the onset never involves more than one branch of a single division and that as time goes on the pain spreads to the other branches of the same division, and then to other divisions. Beginning in the third division, the pain later appears in the second, or vice versa. This is the general rule. Overflow to the first division, as has been seen, is the exception. And later on in the course of the disease when two divisions are involved, it is almost invariably the case that in any given paroxysm the pain does not appear simultaneously in the two, but starts in the division in which chronologically it first appeared and is then referred to the other of the two divisions. Furthermore, the observation has been made not infrequently that in cases in which two divisions at a time may be involved, an alcoholic injection into the division first involved suffices to control the paroxysms in both.

If these observations are accepted there is no necessity for dividing more than that portion of the sensory root which supplies the portion of the gasserian ganglion and its corresponding division, through which the pain is referred. This represents the underlying principle of the operation as I practice it today. If the pain was primarily in the third division and the second and first are free, only the outer portion of the root is divided. Or if the second alone is involved, or was the first to be involved, one or two of the external fasciculi of the third division and the inner fasciculi of the ophthalmic division are left intact.

One may well inquire why so much concern about conserving as much of the root as possible. To appreciate the significance of this discussion, it must be understood what the patient's reaction is to the total

loss of sensation in the affected region. So agonizing is the pain that the patient before operation welcomes any measure that guarantees relief. If told that the face will be numb for the rest of his life, he is quite willing to exchange numbness for pain. After the operation he notices not only that there is no sensation but also that the face and tongue seem swollen; and the anesthesia within the buccal cavity and in one half of the lip and chin embarrasses him in eating. Many patients accept these and other sensory defects cheerfully, and continue content so long as they can live in the happy assurance that they will never have another paroxysm. To some of the others, however, these widespread sensory disturbances continue to be a source of more or less annoyance; even though they would have given their assent to the operation, had they known beforehand what these sensory changes were like, they are not altogether happy or content. If, therefore, the zone of anesthesia can be reduced to a minimum, if only part of the mouth or part of the face is robbed of its normal sensory supply, the patient would be less disturbed. One must have seen these patients frequently and in large numbers, and one must understand their psychologic reactions, to appreciate the significance of these observations.

There is a smaller group who develop paresthesias after the operation. We call them paresthesias, meaning thereby certain disturbed and abnormal sensations. These the patients represent most frequently as burning sensations, sometimes throbbing sensations. They are much more common, strangely enough, in the second than in the third division. In a few instances these paresthesias are a source of great annoyance. An examination is made, and one finds total anesthesia for pain and touch in the zone to which the pain is referred. While still grateful that the original pain has been banished, these patients become fretful and unhappy so long as the paresthesias persist. Although they represent the minority, it is desirable if possible to eliminate these paresthesias, or to reduce these paresthetic zones as much as one can. Thus one has another indication for the preservation of as much of the root as possible.

Subtotal section of the sensory root as applied to the second and third division is a matter of recent adoption in our clinic. I am not, therefore, prepared to recommend it without reservations. That there are theoretical advantages I am convinced, and that the technical difficulties may be mastered I feel confident. We must continue the application of this principle in selected cases, and study the end-results for a longer period before final pronouncement or recommendation as to its universal adoption can be made.

While these reservations are made as to conserving the outer or middle portions of the root (supplying as they do the mandibular and maxillary divisions), I wish again to urge unreservedly the conservation of the inner or ophthalmic portion. Time and experience and the end-results offer full justification for the adoption and practice of a procedure that I believe to be not only justifiable but imperative.

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ABSTRACT OF DISCUSSION

DR. WILLIAM H. RILEY, Battle Creek, Mich.: I think it is quite well established that the so-called descending or spinal root of the trigeminal nerve carries pain and temperature sensibility, whereas the upper part of the nerve root is concerned only with the sensation of touch. We know from clinical experience, for instance, in the syndrome of occlusion of the posterior cerebellar artery, that there is loss of pain and temperature sense on the face on the side of the lesion, and also a similar loss of pain and temperature on the opposite side of the body, whereas tactile sensation is retained in the face. Because of these physiologic conditions, I am wondering whether Dr. Frazier or any other brain surgeons have considered the advisability of dividing this descending root of the fifth nerve which carries sensations of pain and temperature only, and leaving the function of tactile sense to the face intact. Would that be a proper problem for consideration? The descending root of the fifth nerve is very near the surface of the lower part of the pons and the upper part of the medulla, and it seems to me that if that could be divided, the sensations of pain and temperature on the side of the face would then be lost, and the sensation of touch would be retained. I think I recall having heard Dr. Frazier read a paper two or three years ago on a section of the spinal thalamic tract in the lateral funiculi of the spinal cord for the purpose of relieving pain. Sectioning the descending spinal root of the fifth nerve into the lower part of the pons or medulla would be a similar operation. I should like to know whether an operation of this kind has ever been considered by Dr. Frazier or other brain surgeons.

DR. WILLIAM HOUSE, Portland, Ore.: I want to comment on the great reduction in the mortality following operation on the gasserian ganglion. In the midnineties, Keene in Philadelphia and Roswell Park in Buffalo were doing such operations, and from Park's instructions I gleaned that the mortality was not far from 30 or 35 per cent. Unless I am mistaken, Dr. Frazier's mortality, and perhaps that of some other operators at the present time, does not exceed 1 per cent. It appears to me that Dr. Frazier has been largely responsible for this great lowering in mortality. Also, that fractional section of the sensory root has nearly eliminated the cases of corneal ulceration which so commonly resulted from the old-time operation. Another point that Dr. Frazier mentioned, casually perhaps, is the very low percentage of cases of trifacial neuralgia involving the first, or supra-orbital, branch. Fifteen years ago, had I been asked, I would have said that 30 or 40 per cent of all cases of trigeminal neuralgia were supra-orbital. After a fair clinical experience, I have come to the conclusion that I rarely see a case of supra-orbital trigeminal neuralgia which is not secondary; that is, that does not result from so-called overflow from the second or third branch. Therefore, it seems to me that if it has been definitely demonstrated that there is a separate fasciculus for the first branch, it is foolish to sever it if one has sufficient surgical skill to get the rest of the nerve without cutting this fasciculus.

DR. CHARLES H. FRAZIER, Philadelphia: The suggestion of operating on one of the two roots of the branches of the fifth root is very ingenious, but I do not think that it is altogether practicable. There is no doubt that it would add very considerably to the risk of the operation, and the first question which every patient with trigeminal neuralgia asks when the question of operation is approached is whether there is any risk. It is extraordinary how willing they are to bear the pain of this disease without ever becoming addicted to the use of morphine. That is one of the peculiar anomalies of this strange disorder. One would think that 90 per cent of all patients with trigeminal neuralgia would be morphine addicts, and yet it is unquestionably true that any patient one may ever see who is addicted to the use of morphine does not have trigeminal neuralgia. He may have some other form of neuralgia but not trigeminal neuralgia. That is one of the most important points, I think, in the differential diagnosis, and any one who is interested in the surgical aspect of the disease should take warning from that fact alone, because once one makes a mistake in diagnosis, one will never forget it. The patient will not let the physician foget it; he keeps on writing and writing and writing, because he is suffering as much, and more, as a result of the operation. He has all the discomforts and pains that he had before (these are not cases of true trigeminal neuralgia), and all the dissatisfaction of the numbness afterward. We must be sure, therefore, of our diagnosis.

ONE THOUSAND OPTIC CANALS

A CLINICAL, ANATOMIC AND ROENTGENOLOGIC STUDY *

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This report is based on an investigation of 806 optic canals in living and 194 in dried skulls. A detailed report on the latter, and the technic for roentgenography based thereon, are contained in my previous work.[1] In the living, 806 canals were studied in 403 patients, fifty of whom were under 17 years of age (twenty-five male and twenty-five female) and 353 over 17 (197 male and 156 female). The division into two groups, those below and those above 17, is not arbitrary. It will be explained when the direction of the axis of the optic canal is considered.

In order to see whether there is any variation in shape, size or direction of the normal canal depending on racial stock or on sex, the patients were grouped accordingly. The number in each group is shown in table 1.

The examination of the optic canals was definitely indicated in 253 cases. Since one of my objects was to accumulate data on the shape, size and structure of the normal optic canal, I studied the remaining cases. In most of the latter, however, there was some pathologic change in the eye. The causes of the examination in the first 253 cases are given in table 2. Table 3 shows the pathologic conditions that were demonstrated on the roentgenogram.

TABLE 1.—*Racial Groupings*

Race	Male	Female	Total
Anglo-Saxons	68	44	112
Germans and Austrians	35	30	65
Irish	16	12	28
Jews	60	63	123
Negroes	9	4	13
Italians	23	14	37
Greeks	6	1	7
Indian	1	..	1
Spanish	1	4	5
Slavs	2	2	4
French	2	2	4
Hungarian	1	..	1
Swedes	2	1	3

TABLE 2.—*Causes of Examination*

Condition	Number of Cases	Condition	Number of Cases
Retrobulbar neuritis	28	Tumor of posterior fossa	2
Optic neuritis	8	Tumor of orbit (exclusive of optic nerve)	9
Optic nerve atrophy	42	Large foreign body in orbit	2
Exophthalmos	10	Tumor of occiput	1
Suspected fracture	23	Peristitis of orbit	1
Defects of visual fields	13	Cellulitis of orbit	1
Optic nerve tumor	7	Deformed skull	14
External ophthalmoplegia	1	Suspected sphenoiditis (without visual disturbance)	1
Internal ophthalmoplegia	1	Mucocele of frontal sinus	1
Total ophthalmoplegia	1	Aneurysm of cavernous sinus	2
Paralysis of sixth nerve	3	Aneurysm of ophthalmic artery	1
Supra-orbital tumor	2	Aneurysm of internal carotid (petrous portion)	8
Choked disk	2	Sarcoma of orbit	1
Congenital amaurosis	6	Osteoma of ethmoid	1
Retinitis pigmentosa	5	Sarcoma of ethmoid	1
Tumor of pituitary	26	Calcification of circle of Willis	1
Tumor of anterior fossa	2		
Tumor of middle fossa	2		

In all, twenty-three pathologic conditions of the optic canal were demonstrated in eighty-nine of the 253 cases in which such conditions were suspected, or in 35 per cent of the cases. The cause of the visual disturbances was found elsewhere in the skull in 126 cases, or 50 per cent. The negative data were of clinical value in about half of the remaining 15 per cent.

Too much stress cannot be laid on the fact that fifteen cases of deformed skull have been encountered during the same period in which seven optic nerve tumors were discovered. The incidence of skull deformity is therefore more than double that of optic nerve tumor. I have deliberately excluded from these statistics fifteen cases of skull deformity seen in an institution, in order to make these figures representative of the usual private and hospital practice.

TABLE 3.—*Pathologic Conditions Found at Roentgenographic Examination*

Condition	Number of Cases	Condition	Number of Cases
Fracture of the optic canal	3	Large foreign body of orbit lying just in front of optic canal	2
Fracture of sulcus chiasmicus	1	Deformity due to deformed skull	15
Hyperostoses and exostoses	5	Calcification of internal carotid artery	3
Constriction	15	Calcification of ophthalmic artery	1
Congenitally large canals	2	Multiple osteomas of walls of optic canal	1
Enlargement of by optic nerve tumor	6	Fracture of orbit	2
Enlargement by intracranial extension from melanosarcoma of choroid	1	Deepening of notch for sixth nerve (on dorsum sellae)	1
Enlargement by destruction of posterior portion of canal	1	Calcification within lumen of canal	4
Destruction of bridge between canal and sphenoidal fissure	4	Enlargement of optic canal by tumor of orbit (not involving nerve)	1
Destruction of roof	2	Circumscribed osteosclerosis of sphenoid	6
Destruction of entire apex of orbit	2		

It was pointed out in my previous work [1] that a knowledge of the direction of the axis of the optic canal is essential in the study of the shape and size of its cross section. In normal adults this axis is directed downward and outward toward the lower outer angle of the orbital margin. It is evident, therefore, that it depends on the distance of this angle from the median vertical plane of the skull, from the bitemporal vertical plane passing through the intersection of the axes of the two canals, and from the bitemporal horizontal plane passing through the same intersection. In my measurements on the dried skulls I introduced a probe into each optic canal, then measured these distances, and determined the direction of the axis by the method of graphic triangulation. The exact direction was then recorded by giving the inclination of the axis to the principal horizontal plane of the head, and to the median plane of the head. I refer to the former as the angle α, and to the latter as the angle β. The average values of α and β were found from the measurements on the dried skulls to be 37.9 and 38.3 degrees, respectively; for practical purposes, 38 degrees each. These figures apply only to adults.

In the developmental series of fifty skulls between the ages of 3 months and 20 years, the angle α was found to vary from 28 degrees in the first year of life to 38 degrees at and after 17 years. The angle β was found to vary from 35.5 degrees during the first year to 38 degrees at and after 17 years. Curves giving the variation according to age have been published by me.[2]

With these figures as a basis, the 806 optic canal roentgenograms of the living skulls were made. I assumed constant values of the angles α and β, 35 degrees each, in all adults (over 17 years). For the patients under 17, the angles were taken from my curves. The resulting projections of the optic canals were therefore not

* From the Herman Knapp Memorial Eye Hospital.
* Read before the Section on Ophthalmology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 18, 1927.

1. Goalwin, H. A.: Der Canalis opticus bei normalen und deformierten Schädeln, Ztschr. f. Augenh., 1924, pp. 191-206; Die exakte radiographische Darstellung des Canalis opticus, Fortschr. a. d. Geb. d. Röntgenstrahlen **32**: 218-222, 1924.

2. Goalwin (footnote 1, first reference).

exactly at the lower outer angle of the orbital margin, but higher and more internal. The exact amount of this displacement shows the actual deviation from the assumed angle. By calculation I found that each millimeter of displacement represents an angle of two thirds of a degree. By measuring this displacement on the roentgenogram, I was enabled to determine the actual direction of the optic canal in each case. The object of these measurements of the direction of the axis of the optic canal was to determine whether there is any variation according to racial stock and, possibly, sex.

TABLE 4.—*Average Direction of Axis of Optic Canal in Adults*

	Men		Women		Total	
	α	β	α	β	α	β
Entire series	38.6	39.6	39.4	39.8	39.1	39.8
Anglo-Saxons	38.6	39.4	38.0	39.0	38.8	39.5
Germans and Austrians	39.0	39.5	38.5	39.0	38.7	39.4
Irish	40.2	38.4	37.8	39.8	39.1	39.2
Jews	38.8	39.5	38.8	39.0	38.8	39.2
Italians	37.8	40.8	38.8	40.3	38.0	41.4
Negroes	39.4	39.2	37.7	39.8	38.8	39.4

Table 4 shows the average direction of the optic canal axis in the adults of the present series, the angles α and β being given in degrees. The smaller racial groups were omitted, as there is not a sufficient number in any one of these to warrant drawing any definite conclusions. They are, however, included in the total.

These figures show that the maximum variation between any two groups recorded in this series is 2.5 degrees. The maximum variation between this series and the preceding series is 1.5 degrees. It is therefore justifiable to conclude that, for all practical purposes, there is no variation in the direction of the axis of the optic canal depending on racial stock or sex. If the fractions of a degree are dropped, it may be said that the axis of the optic canal of the normal adult has an average inclination of from 38 to 39 degrees to the horizontal plane of the head, and the same degree of inclination to the median vertical plane of the head. This, again, applies to adults only. In patients under 17 years I shall have to adhere to the averages originally published until a larger series proves them to be wrong.

SIZE OF CROSS SECTION OF OPTIC CANAL

In accordance with the procedure followed in the first series, the two principal diameters were measured: the A diameter, which is directed downward and outward at an angle of 45 degrees, and the B diameter, which is at right angles to A. Since the optic canal has the full adult size of cross section at the age of 3 years, practically all the optic canals of the two series were available for obtaining these averages. In the living, the actual size of each diameter was calculated from the corresponding diameter of the roentgenogram by means of the following formula which I derived for this purpose:[3]

$$x = d - \frac{b}{a}(d + f)$$

In this formula, x is the actual diameter of the optic canal; d is the corresponding diameter as measured from the roentgenogram; b is the distance of the optic canal from the roentgenogram; a is the distance of the focal spot of the roentgen-ray tube from the roentgenogram, and f is the diameter of the focal spot of the roentgen-ray tube, used as determined by the method which I have described.[4] The average diameters obtained in this series are given in table 5.

It will be noted that in both series the A diameter is smaller than the B diameter, and that the left B diameter is smaller than the right. It will also be noted that the maximum difference between the averages of the two series is 0.26 mm. Since this is much less than the variations noted between the right and left optic canals of the same person, as will be shown later, it is negligible. It is therefore justifiable to say that the average normal optic canal is 4.1 by 4.65 mm. in cross section, irrespective of age, sex or racial stock. If the smallest and the largest average A diameters are excepted, which were obtained from only four and five optic canals, respectively, the maximum variation of this diameter in all the groups is only 0.28 mm., and the maximum variation of the B diameter is 0.42 mm. Both of these figures are less than the maximum normal variation noted between the two optic canals of the same individual.

The ophthalmologist often asks: "Are not the right and left optic canals frequently different in size in the same individual?" The following statement is the numerical answer to this question:

Of 349 patients in this series with optic canals normal in size, symmetry of the two optic canals was noted in 154 cases, or 44.3 per cent. Only those canals were considered symmetrical in which the right A diameter was exactly equal to the left A diameter, and the right B diameter was exactly equal to the left B diameter. Cases in which the A diameter of one side was exactly equal to the B diameter of the opposite side were excluded, even when the total area of the cross section of the optic canal was the same on the two sides.

TABLE 5.—*Average Diameters (in Millimeters) of Cross Sections of Optic Canals*

	A		B	
	Right	Left	Right	Left
Previous series	4.26	4.33	4.49	4.30
Entire present series				
Male	4.07	4.07	4.70	4.60
Female	4.17	4.03	4.68	4.53
Total	4.07	4.07	4.70	4.68
Adults only				
Male	4.07	4.07	4.70	4.60
Female	4.17	4.03	4.70	4.53
Total	4.07	4.07	4.68	4.68
Juveniles only				
Male	4.07	4.11	4.61	4.61
Female	4.20	4.10	4.47	4.51
Total	4.14	4.15	4.54	4.56
Anglo-Saxons				
Male	3.91	4.13	4.61	4.58
Female	4.19	4.03	4.60	4.58
Total	4.05	4.08	4.60	4.58
Germans and Austrians				
Male	4.08	4.08	4.83	4.86
Female	4.30	3.07	4.67	4.70
Total	4.17	4.18	4.78	4.77
Irish				
Male	4.30	4.30	4.84	4.74
Female	3.82	4.03	4.52	4.26
Total	4.07	4.18	4.68	4.50
Jews				
Male	4.14	4.07	4.74	4.51
Female	3.96	3.99	4.43	4.42
Total	4.02	3.99	4.58	4.47
Italians				
Male	4.25	4.17	4.75	5.17
Female	4.03	4.10	4.76	4.47
Total	4.26	4.10	4.83	5.49
Negroes				
Male	4.50	4.28	4.65	4.52
Female	4.13	4.27	4.30	4.52
Total	4.34	4.29	4.50	4.52

3. Goalwin (footnote 1, second reference).

4. Goalwin, H. A.: The Standardization of a Roentgen-Ray Tube for the Precise Roentgenography of the Optic Canal, Am. J. Roentgenol. **13**: 287-291 (March) 1925.

Differences of 9 per cent or less were noted in 39.5 per cent of the cases; differences of from 10 to 20 per cent occurred in 14 per cent of the cases, and the remaining 2.2 per cent of the cases presented differences of from 20 to 28 per cent.

The largest normal canals were observed in a case of tumor of the middle fossa with associated high intracranial pressure of long standing. These measured 4.7 by 7.24 mm. on the right side, and 4.3 by 7.0 mm. on the left side. Enlargement of the optic canal under these conditions has been observed by other investigators. The largest pathologic canal was noted in a case of optic nerve tumor. The left side was involved, the A and B diameters presenting an enlargement of 71 and 54 per cent, respectively, as compared with the normal opposite side.

The minimum enlargement of an optic canal by an optic nerve tumor was 33.3 per cent. In this case, however, the unaffected side had a very large canal (5.6 by 6.0 mm.).

When the entire apex of the orbit is destroyed, as occurred twice in this series, it is no longer considered an enlargement of the canal, as there is no canal left.

Another question frequently asked by the ophthalmologist is: "How small does an optic canal have to be in order to produce optic atrophy by compression?"

In this series, optic canals with one diameter 2.8 mm. or less were not noted to house a functioning optic nerve. It seems to make no difference how large the other diameter of the optic canal is. Only one optic canal was noted with a diameter of 2.8 mm. without any ophthalmoscopic evidence of optic atrophy in the same eye. The vision in this eye was 20/200, and could not be improved with any lenses. The clinical diagnosis was amblyopia due to high error of refraction.

The smallest pathologic canal observed had a B diameter of 1.4 mm., the constriction being caused by hyperostosis due to an old fracture of the roof of the optic canal. There was total atrophy of the contained nerve.

In the reports in the literature, the data on the shape and size of the optic canal vary greatly with the authors who report them. Several factors are responsible for these variations. The optic canal has the shape of an irregular oblique truncated cone; hence its cross section is not constant in shape or size, but depends on the angle of observation and the point at which measurements are made. Its minimum cross section is at the posterior end, where, therefore, the measurements should be made. They should furthermore be made at right angles to the axis of the canal. Deviations from this rule will produce differences in the size and shape of the same optic canal.

Since the normal optic canal never has a truly circular cross section, its size cannot be given by stating one diameter. For this reason, a probe cannot be used for measuring it. The use of small, fine-pointed calipers will permit of accurate measurement of the optic canal in any desired direction.

Measurement of the size of the optic canal in the living is done by means of roentgenography. It is obvious to any one familiar with the principles of descriptive geometry that the true shape of the minimum cross section of the optic canal can be projected on the roentgenogram only when the axis of the optic canal is perpendicular to the roentgen-ray plate or film and the central projecting ray corresponds with the axis of the optic canal When these rules are adhered to, the true shape of the cross section of the optic canal is obtained, but not the true size. This is enlarged, the enlargement depending on various factors which have been discussed in the foregoing. Since many of the authors report these roentgenographic measurements without reduction, or with only empiric reduction, variations greater than the actual are to be expected.

SHAPE OF THE CROSS SECTION OF THE OPTIC CANAL

When the optic canal is carefully roentgenographed in accordance with the principles just stated, its shape in most normal skulls approximates that of the quadrant of a circle. The two nearly straight sides of this quadrant are the roof and inner wall, while the arc is the outer wall. Most of the variations in normal skulls are attributable to faulty projection, although actual variations are encountered. A classification of the various normal shapes found is not of clinical value because, with few exceptions, pathologic optic canals present, in addition to changes in shape, changes in size or in the structure of the walls, or both.

A true geometrically circular cross section was never found in a normal case, and was always associated with enlargement by optic nerve tumor. When the bridge which separates the optic canal from the sphenoidal fissure is destroyed, then the two openings form together one opening resembling a keyhole. Two such cases were seen in the present series, the first of which I have described in detail elsewhere.[5]

Bulging of a pneumatized anterior clinoid process into the lumen of the optic canal was observed four times. In three instances, the anterior clinoid process was sclerosed as a result of infection. As would be expected, the infection was not limited to the clinoid process, but involved the corresponding portion of the optic canal, producing local hyperostoses and, in one case, an exostosis.

Each of the deformed skulls showed the typical deformity of its optic canals. In oxycephaly, the long triangular or pear shaped canal was found. The base of such a canal is directed downward and outward, and the apex is below and internal to the base; the A diameter is constricted. The change is bilateral, although not always equal in degree.

The same changes were noted in the cases of plagiocephaly, except that here they are limited to the affected side. One of these plagiocephaly cases showed a pair of kidney-shaped, constricted canals. The visual fields in this case showed defects which corresponded with the encroachment on the lumen of the canal. This case has been described in detail by Tyson.[6] In one case of trigonocephaly there was the same shaped optic canal as that which I noted in cases of scaphocephaly: a definitely triangular optic canal, the base of which is directed downward and outward and the apex of which is situated above and external to the base; with marked constriction of the A diameter.

It is evident, therefore, that the important thing from the clinical standpoint is not the classification of the normal optic canals, but the recognition of the typical shapes associated with the various skull deformities, and with the various forms of pathologic change in the lumen and walls of the optic canal, and in the structures adjacent to it.

5. Goalwin, H. A.: The Clinical Value of Optic Canal Roentgenograms, Arch. Ophth. **55**: 1-20 (Jan.) 1926
6. Tyson, H. H.: A Case of Plagiocephaly, Tr. Am. Ophth. Soc., 1926.

SUMMARY

1. The discrepancies between the sizes and shapes of the optic canal as reported by various authors are due to: (*a*) measurements made at different points of a conically shaped canal; (*b*) observations that are made from varying angles, and (*c*) the use of roentgenographic dimensions without proper reduction.

2. In a series of 253 cases examined for thirty-four causes, twenty-three types of pathologic change of the optic canal were found in 35 per cent of the cases. In 50 per cent of the cases the cause was found elsewhere in the skull and in about 7 per cent the negative diagnosis was of clinical value.

3. Judging from this series, skull deformity with optic nerve symptoms is fully twice as frequent in ophthalmic practice as optic nerve tumor.

4. Measurements of the direction of the axes of 1,000 optic canals (806 in the living), in 500 skulls, lead to the conclusion that there is no appreciable variation depending on sex or racial stock. The average inclination of the axis of the optic canal in the normal adult skull is 39 degrees, and is the same to the horizontal as in the median vertical plane.

5. The average normal optic canal in this series measures 4.1 by 4.65 mm., with virtually no variation depending on age, sex or racial stock.

6. Absolute symmetry of the optic canals may be expected in about 45 per cent of normal skulls; differences of 10 per cent or less may be expected in about 40 per cent of normal skulls; differences of from 10 to 20 per cent occur in about 14 per cent of normal skulls.

7. An optic canal that measures less than 2.8 mm. in one of its diameters cannot contain a normal optic nerve.

8. A classification of the normal shapes of the optic canal is not of clinical value, because pathologic canals present changes in the size or structure of their walls, or both.

9. An enlarged, circular optic canal is indicative of optic nerve tumor. Certain constricted triangular canals are characteristic of certain skull deformities.

10. Irregularity, erosion or destruction of any wall or part of a wall is always pathologic. Hyperostosis and exostoses are, of course, always pathologic.

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ABSTRACT OF DISCUSSION

DR. G. E. PFAHLER, Philadelphia: We are indebted to Dr. Goalwin for having worked out the anatomic relations of these canals and for having determined their circumference and uniformity. He has shown that there is little difference on the two sides; in other words, in about 50 per cent of the cases the two canals are symmetrical. Therefore, we have the opportunity of comparing one side with the other in making our interpretations. He has shown that the axis of this canal is practically uniform, and is directed downward and outward into the lower outer quadrant of the orbit, or near the lower outer margin of the orbit. He has also shown how much difference it makes when this canal shadow is not projected directly into the lower outer portion of the orbit. He has described this technic very minutely and very exactly, and if it is followed exactly others can reproduce this result, but we should keep in mind that in all instances this canal must be projected near the lower outer border of the rim of the orbit, and unless it is found there, it is better to ignore the observations with regard to this canal. I have not had the opportunity of testing out the pathologic interpretations of this canal, but as a roentgenologist I am convinced that this technic is of definite value, because by means of it we can study all the structures as far as they affect bones in relation to this canal, and it is bound to be of some definite value in interpretation. We must be most cautious in making these interpretations, for it is easy for the clinician to see in a roentgenogram what he wants to see, and it is very easy, too, for the roentgenologist to lean toward the interpretation of the clinician or what the clinician thinks should be seen. Let us for the present be very cautious in the use of this method, or we shall unjustly bring discredit on it.

DR. H. H. TYSON, New York: The importance of taking roentgenograms of the optic canals in cases of lesions of the optic nerves cannot be overstressed. Whenever one considers that knowledge of the condition of the sella turcica is necessary as an aid in determining the etiology of a given case, he should at the same time obtain information as to the patency and size of the optic canals. The results are usually interesting and instructive, especially in the examination of the optic canals in abnormalities of the skull. Recently, I examined ophthalmoscopically sixteen selected patients at Letchworth Village, New York, while Dr. Goalwin and Dr. H. W. Potter made the roentgenologic examinations. Ten of the patients had atrophy of the optic nerve. In eight of the canals, the A diameter measured less than 2.6 mm., four of them measuring only 2.2 mm. Fourteen had one canal smaller than the average, while in six both canals were smaller than the average. It is interesting to note that the physical appearance of the head does not necessarily indicate the anticipated size of the optic canals. While canals of small size might be expected in microcephalic persons, the reverse is usually found, as most of those examined were normal in size; whereas in oxycephalic persons both canals may be of normal size, or one diameter may be reduced to one-half the average size, as found in a number of the foregoing cases. The same observation applies in plagiocephalia, scaphocephalia, and other like conditions. In order to benefit mankind by aiding in the conservation of vision, the early recognition of the presence of abnormal optic canals is imperative, in order that indicated operative procedures for relief of the osseous compression of the optic nerves may be instituted early, before irreparable injury to the nervous elements ensues.

ARTHRITIS

A SIMPLE CLASSIFICATION, ILLUSTRATED BY ITS APPLICATION TO A SERIES OF CASES *

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The whole subject of arthritis is still in a state of uncertainty and confusion which makes the labeling of cases difficult. It follows that the prognosis and treatment are also confused. The pathologic nomenclature does not offer clear-cut clinical divisions, and many etiologic problems are not yet settled. The most serviceable clinical grouping is that of the Goldthwait school. The types of cases are listed as: (1) infectious; (2) atrophic; (3) hypertrophic. There are occasional transitional forms. Recovery from the simple infectious type may be complete or there may be numerous remissions and recurrences without change of type. On account of the age, diathesis and constitutional condition of the patient it may slip over into one of the other types. This is not common, however. Usually a case runs true to form throughout its course.

What, then, are the distinguishing characteristics of the three types?

1. The pure infectious type may occur at any age. It is characterized by the widest range of pathologic changes. In order from mild to severe they are synovial congestion with increase of fluid, plus capsular and periarticular infiltration and thickening, or plus synovial hypertrophy with little free fluid. It may go on to

* From the Research Hospital Diagnostic Clinic.

pannus formation and thinning or loss of joint cartilage, or there may be early involvement of the cancellous bone beneath the cartilage with bone changes and destruction of cartilage, or an early severe panarthritis. The final stage may be marked by limitation of motion on account of capsular contraction, synovial hypertrophy or fibrous adhesions, or, occasionally, by ankylosis of short fibrous or bony type. Complete resolution may occur up to the point of loss of joint cartilage. The roentgenograms are usually negative except as they show some swelling or thickening of the soft parts. Later a diminished joint space may indicate loss of cartilage, and in the worst cases there is some roughening of bone.

2. The atrophic type is a disease of youth or of middle age. It is characterized by early, soft, fusiform swelling of joints. As the swelling subsides there is a marked shrinkage of the capsule, limiting motion and causing contractures or subluxations. The cartilages are thinned and there is a distinctive bone atrophy in the affected parts disproportionate to the atrophy of disuse. There is an atrophy of the soft parts most characteristically shown in the atrophy of the intrinsic muscles of an affected hand. This is so striking as to suggest a neurologic element. The disease is progressive, leading to deformity, great disability, and fibrous and bony ankylosis in many cases.

3. The hypertrophic type is a disease of middle and old age. It occurs earlier in those who have done hard manual labor or are prematurely old for other reasons. Most cases of so-called menopause arthritis are of this type. It is characterized by a degeneration and slow destruction of the cartilage on the main bearing surfaces of the joint with increased activity of the perichondrium at the periphery of the joint, with the formation of rims or spurs of new bone. There may be increase of joint fluid at times, and a few cases present a hypertrophy of the synovial membrane with deposits of chalk or cartilage, which produce so-called loose bodies.

In at least part of the cases the first stage is the death of areas of bone in the articular extremities without the presence of bacteria or the formation of pus. The center of these areas may show rarefaction or the formation of tiny cavities. It is held by some authorities that all the other changes are secondary. This is a matter of great pathologic interest but may well be forgotten in the clinical picture held in the mind for the classification of cases. It takes a practiced eye to detect these changes. The roentgen-ray diagnosis is made on the lipping or spur formations of the edges of the joint.

Fibrous ankylosis from intra-articular fibrous tissue does not occur. Bony ankylosis is almost unknown, even when the cartilage in the center of the bearing surfaces has been entirely destroyed and the eburnated bony surfaces are in direct contact. Motion is limited by the squaring up of the articular ends, by the bony excrescences, and by contractures of the capsule or tendons caused by the habitual assumption of a position of partial flexion to escape a painful point of contact.

The pure infectious type is always due to bacterial infection. The micro-organisms are often present in some of the joint structures. They are seldom found in the free fluid. In other forms there seems to be a sort of anaphylactic reaction of the joints to the bacterial toxins generated at some distant point.

In the first group of cases of acute infectious arthritis, virulent organisms gain entrance through some mucous membrane which has not been previously diseased to any appreciable degree. These are cases in which the mother or nurse caring for a patient with an acute streptococcus sore throat or acute meningitic chorea or virulent pneumonia suddenly has an acute onset of arthritis. It also includes many of the cases in which the arthritis follows as a complication in a patient suffering from one of the exanthems or pneumonia or influenza. Several of the worst cases in my personal collection have followed influenza and later showed roentgen-ray evidence of inflammation in the bone close to the joint as well as a severe arthritis.

The second group of acute cases have their origin in some previously existent local focus of infection, most often the tonsils. Here, early removal of the focus usually results in complete cure unless there has been also an endocarditis.

The subacute and chronic cases are all due to some local focus of infection. If the primary focus has been removed or cured and the arthritis continues, one may be certain that there is a secondary focus.

The pure infectious type has an acute or subacute onset. One of the clinical characteristics of this group is that they tend to remission or recovery, often without permanent injury to the joint. Joints of which the patient complained greatly a few weeks or months before may be symptom free, while some other joint may hold the center of the stage with acute symptoms. Only slowly do permanent changes take place in some of the joints. Occasionally there is a very acute case in which the cartilage is destroyed early.

General physical and laboratory examination of the great majority of these patients is negative in the earlier stages. They are not anemic, there is no obvious disturbance of the body chemistry, and there is no endocrine unbalance. They have arthritis, and the history records exposure to acute infection, or careful search reveals some local focus of infection.

The atrophic form presents a different clinical picture. Its victims have usually always been somewhat delicate. They are commonly of the slender, visceroptotic type with a spastic colon. There is frequently a history of previous overwork, or of mental shock or worry. They suffer from malnutrition, anemia, disturbed body chemistry or endocrine unbalance. Some bacterial infection may have added the final thrust which started the arthritis. They are never cured merely by the removal of some real or suspected focus of infection and are often made worse by the shock incident to surgical procedure. The affected joints seldom undergo resolution, and when swelling subsides and pain diminishes, the contractures come on. There are permanent changes demonstrable on examination and by roentgen ray. These cases are never cured or arrested by any single line of treatment, but only in the more fortunate patients by attention to every possible means of improving the general health.

The hypertrophic patients present an almost opposite picture. They are usually of the stout, thick-set type, or have gained weight markedly in middle age. There is a slowing down of metabolism; the blood pressure is often low; constipation is of the sluggish or atrophic type, with spastic changes developing only after long irritation. The joints most affected are those most subjected to occupational or postural strain: the fingers, back, knees and hips. The same sort of bone changes take place in many very old persons or in those prematurely old from hard labor and poor living conditions. These aged arthritic patients may have advanced arteriosclerosis with high blood pressure.

Roentgenograms of the lumbar spine taken for other reasons in persons over 50 years of age disclose a high percentage of hypertrophic arthritis in subjects who are not complaining of symptoms referable to the spine. Many aged women exhibit Heberden's nodes without other notable joint changes. In women just past middle age the appearance of these nodes on the terminal phalanges is all too often followed by hypertrophic arthritis in the larger joints.

In my opinion, this type is not caused by bacterial invasion and is not cured by the removal of local foci of infection. The only qualification to this view is an admission that the products of bacterial growth in the colon may influence the development of hypertrophic arthritis, and attention to diet and complete evacuation of the colon may aid in the arrest of the process. If there are local foci which are obviously a menace to the general health, they should be removed; but it is a great injustice to have the teeth extracted, or perform other operations, in the vain hope of curing the arthritis.

These joints never undergo complete resolution. There are always some changes in the roentgenograms. The progress is usually slow and may be arrested spontaneously or as the result of treatment. Often patients suffering great discomfort from sharp spurs are better after a year or two because the spurs have been built up and rounded off into blunt mounds. The disease sometimes causes severe pain and disability in a hip, out of all proportion to its behavior in other joints.

In a series of four hundred consecutive cases in the Research Hospital Diagnostic Clinic, referred to me for orthopedic examination, seventy of the patients were suffering from arthritis as their major complaint or their most prominent secondary complaint; thirty-five, infectious arthritis; seven, atrophic arthritis, and twenty-eight, hypertrophic arthritis. In just half the patients of this series, namely, the atrophic and the hypertrophic cases, it was not expected that any local focus of infection would be found, or, if one was found, that its removal would cure the arthritis.

This belief considerably simplified the prognosis and treatment and saved the patients operations likely to result only in disappointment. Occasionally some local focus was cleaned up in the hope that it would improve the general health of the patient.

The atrophic patients had all had supposed foci removed without permanent benefit. Attention was centered on the improvement of body mechanics, on treatment of the anemia and the endocrine unbalance, on fresh air and sunshine and forced feeding.

The hypertrophic patients were most of them put on an antifat diet. Much attention was paid to improving elimination and preventing colonic stasis. The affected joints were protected as much as possible from postural strain. Most of them received thyroid. Such a line of treatment was not suggested for the very old.

On the other hand, in the infectious type, we were most diligent in our search for some focus of infection, feeling sure that we could not solve the problem unless we found it.

In about one third of the cases the answer was simple. It was plainly a matter of tonsils, teeth or sinuses, or an endocervicitis or a urethral or prostatic infection. The proportion would run much higher in ordinary practice, but most patients coming to this clinic have already consulted many physicians or been through other clinics.

The difficult problem was to find obscure foci or secondary foci which were harboring the infection, usually because there was too great delay in removing or treating the primary focus. It has been pointed out by the Cornell arthritis clinic and by many other observers that the time at which a patient with subacute or chronic infectious arthritis comes to a competent internist or clinic is of the greatest importance. Those who come early are almost all cured. Those who come late prove to be very difficult.

In our examination of the particular group, a few were found in which the infection still lurked in a tonsil stub or in a sinus or ear despite an earlier operation, or there was some localized necrosis in the jaw following the extraction of the teeth. In a few others the proctoscope revealed an ulcer or abrasion which seemed to be the trouble maker. In a much larger number of cases the colon was the source of infection. Most of these patients did not have a frank colitis but rather a fecal retention, usually most frequent in the cecum and not infrequently favored or caused by some kink or partial rotation rather than by simple ptosis. Treatment of irritated areas in the upper rectum or lower sigmoid through the proctoscope seems often to help in the evacuation of the upper colon through the removal of some reflex inhibition.

It cannot be too often emphasized that a patient may have a bowel movement every day and still have a retention, or that the bowels may be moved freely by cathartics and still have old fecal masses clinging to the sides of the colon. Observation with the fluoroscope after opaque meals, repeated at irregular and prolonged intervals, and after exercises and after the exhibition of laxatives, is necessary to make sure of the condition of the colon.

In a surprising number without any distinct symptoms of gallbladder disease, gallbladder visualization showed a pathologic condition. Either the gallbladder did not fill with the dye, or, more commonly, it filled slowly and then failed to empty in any reasonably normal length of time.

We are forced to the conclusion that these quiet, pathologic gallbladders are not infrequently the secondary focus of an arthritis.

There are a few cases in which it was felt that the infection was carried in one of the larger joints, usually the knee, and that free operative exposure and a synovectomy was the indication.

The use of sodium or ammonium iodoxybenzoate intravenously, with careful technic and very slow administration, is the most efficient drug treatment in subacute and chronic cases. It furnishes a sort of therapeutic test of the correctness of one's classification. In the infectious group it almost always gives at least some relief, and where local foci have been removed or their virulence is low, it seems to complete a cure. In the cases in which we held that an infectious element was not present at all or played only a minor rôle, we have noted almost no beneficial effect from this drug. This conclusion is based on my observation of a series of cases treated by Dr. Wilbur A. Baker in our joint office suite.

It has been noted that removal of a true focus of infection sometimes makes the arthritis worse for a time by the liberation of toxins into the circulation.

It has also been noted that operations not too severe in type sometimes caused marked temporary improvement, but no permanent benefit.

After making due allowance for the psychic element, it seems that the administration of the anesthetic, with

the preparation and after-care, is responsible for the transient benefit. Osgood has confirmed this by giving the anesthetic without doing any operation with the knowledge of the patient.

It seems to me that this effect is most marked with gas-oxygen, and that administration of oxygen might be a therapeutic aid in some cases. It would seem also to explain an occasional beneficial effect from tank treatment with compressed air.

The suggestion that sweat baths are valuable to those who had acid sweat on other parts of the body than the hands and feet has been confirmed and the litmus paper test is regularly used.

It has been suggested by several observers that slowing of the local circulation may be a predisposing cause of arthritis and particularly that capillary obstruction and stasis may be an important factor in the continuance of the disease in chronic cases. This suggestion emphasizes the value of physical therapy as an adjunct to treatment. It must never be expected to accomplish a cure unaided.

It is not my desire to report cases or to go into details of treatment at this time. It is urged that every physician use some simple clinical classification for arthritis and attempt to place his cases in one of these groups and direct his attention to the major characteristics of the group in his study and treatment of the individual case.

It is necessary to distinguish between those cases in which the discovery and treatment of a local focus are all important and the other groups in which they are of little value.

Every case of infectious arthritis imposes a peculiar obligation on the physician in charge. He must not be satisfied even if the symptoms subside, but must search earnestly for the focus of infection and attend diligently to the general health of the patient. In the first year it is almost always possible to effect a cure; after five years, perhaps nobody can do so.

In subacute and chronic cases it is undesirable to allow the patients too much rest. If one keeps them down too long or knocks them down by too strenuous treatment, they may never resume any useful activity.

No case of chronic arthritis should be accepted for medical, surgical or mechanical treatment, until the history has been carefully considered and a thorough physical and laboratory examination has been made.

The problem is difficult enough at best. Whipping up one horse will not get the coach out of the mire. It will be necessary to consider many factors and get all the vital forces in hand and pulling together if one is to have any reasonable chance of achieving success.

Argyle Building.

Rage Increases Muscular Strength.—In testing the grasping reflex in infants . . . we found that in very many cases the child could not at first support its full weight, but if by hampering its movements we could produce rage, the muscular strength suddenly increased and the child would immediately support its whole weight, and in other cases could sustain its weight for a much longer period of time. A possible explanation of this has been advanced by Dr. Cannon of the physiological laboratory of Harvard University. In the primary emotions certain internal glandular secretions are set free which tend to wash out fatigue products from the muscles and to increase the amount of food for the muscles, etc. Hence, when in the throes of the major emotions, we do actually possess greater muscular strength and endurance than at other times.—Watson: Suggestions of Modern Science Concerning Education, p. 68.

THE EFFECTS OF OBSTRUCTIVE LESIONS OF THE COMMON DUCT OF THE LIVER *

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AND
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While the accepted tests of hepatic function in obstructive jaundice such as the dye retention test and the van den Bergh test yield valuable information concerning the clinical condition of the patient, they do not afford an accurate indication of the amount of temporary or permanent hepatic injury caused by bile stasis and infection. Mann and Bollman [1] in their recent survey of the subject have made this point clear. It would seem that no short-cut laboratory methods can yet replace careful gross and microscopic examination of all material obtained at operation or at necropsy, as a basis for the treatment of future cases.

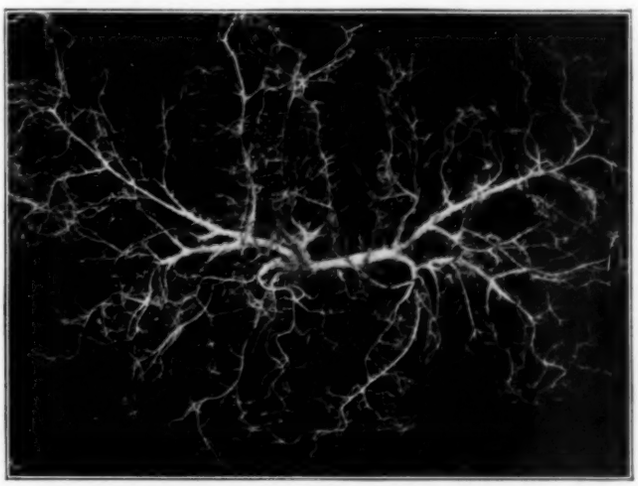

Fig. 1.—Normal corrosion preparation of biliary tree.

There is a tendency for the surgeon to neglect the rather unknown intrahepatic portion of the biliary tract in considering the effects of the local lesion, even though a thorough knowledge of its condition might modify his technic or alter his prognosis. This, in itself, is not surprising. External evidence of disease in this organ is often lacking, although the most profound changes may have occurred within it Occasionally the changes can be demonstrated only by the microscope, as for instance the generalized hepatitis shown by Graham,[2] and by MacCarty and Jackson [3] that is present in cases of cholecystitis. Anatomically, too, the intrahepatic bile ducts are out of sight, out of mind, although newer methods of investigation have shown that they play an important part both in the symptoms and in the pathologic changes.

It is natural to expect that in obstructive lesions of the common duct, the hepatic changes would be serious,

* From the Division of Surgery, Mayo Clinic.
* Read before the Section on Gastro-Enterology and Proctology at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 19, 1927.

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and they are. As Weber[4] first suggested, a close parallel may be drawn between the kidney and the liver following obstruction of their respective ducts. In both, progressive dilatation of the entire duct system takes place with corresponding atrophy of the parenchyma, infection of the retained secretions and generalized sclerosis, with subsequent vascular disturbance. On this basis, Rous and MacMaster have suggested the term

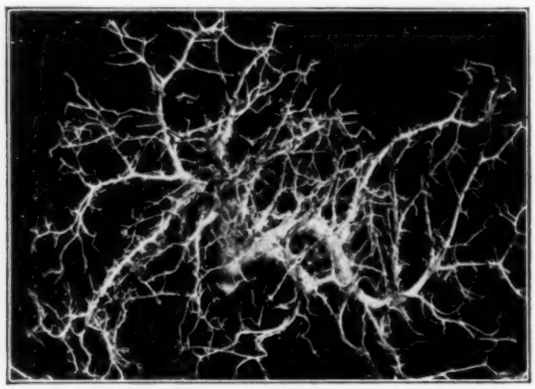

Fig. 2.—Result of intermittent obstruction of the common bile duct by stone.

hydrohepatosis as descriptive of the hepatic changes. It is an excellent parallel to keep in mind, for the condition is rarely so obvious in the liver externally on account of the greater ratio of parenchyma to duct and the lower secretory pressure of the liver. Moreover, the conditions which produce hydrohepatosis are, in a measure, similar to those which produce hydronephrosis. Exclusive of certain uncommon extrahepatic agencies which produce obstruction of the common bile duct by pressure, there are three which are of paramount importance to the surgeon: choledocholithiasis; benign stricture and malignant occlusion of the duct. Before discussing the effects of each of these three types of obstruction on the liver itself, we shall review briefly the anatomy of the intrahepatic bile ducts.

ANATOMY OF THE INTRAHEPATIC BILE DUCTS

By means of celloidin casts of the normal ducts, it has been shown that the biliary tree is composed of a series of slender branches gradually increasing in number and decreasing in size, from the hepatic ducts to the finest bile passages (figs. 1 and 2).[5] The ramifications of the right branch are entirely separate from those of the left, the plane of separation passing, as in the case of the right and left branches of the portal vein and hepatic artery, through the fossa of the gallbladder to the entrance of the hepatic veins into the inferior vena cava. In a large number of experiments, a ductal anastomosis could not be demonstrated from side to side except by means of the vasa aberrantia between the angle made by the right and left hepatic ducts and through the medium of the intercellular canaliculi. This is in accord with sharply demarcated unilateral lesions of the liver in cases of obstruction of either the right or the left hepatic duct. Within the portal spaces, the ducts traverse the substance of the liver in close relationship to the portal vein. Both the portal and the hepatic artery frequently wind around the bile duct spirally, behaving very much like vines on the trunk and branches of a tree. The situation of the duct in this neighborhood is ideal for the production of venous strangulation and consequent diversion of the portal blood current which occurs in obstruction. From the hepatic duct, which rarely measures more than 5 mm. in diameter, to the finest recognizable branches measuring from 0.5 to 1 mm. in diameter, five or six orders of branching can be counted. Mall[6] states that the canaliculi arise from the fifth order onward. The walls of the ducts are thin, but are remarkably tough, being composed almost entirely of fibro-elastic connective tissue lined by a well defined layer of columnar epithelium. Muscle tissue and definite glands, such as have been described in the extrahepatic portion of the biliary tract by Aschoff[7] and Burden,[8] are absent.

Within the walls of the ducts and arranged in two rows on opposite sides of the lumen, corrosion specimens show those curious structures of speculative origin and function which have been variously referred to as parietal sacculi (Kiernan[9]), diverticula (Beale[10]), or mucous follicles. Most of them end blindly as dilated cecal pouches, although anastomosis often occurs between them along the walls of the ducts. Theile[11] believed that they secreted the mucus of the bile, a view opposed by Beale and by Sweet,[12] who attributed to them the function of accessory gallbladders. Besides these tiny pouches, longer and more tortuous tubules can be seen to arise from the ducts in such situations as the left coronary ligament; in the angle between the right and left hepatic ducts, and in other parts of the liver where the continual parenchymal shift occurring from fetal to adult life has left portions of hepatic framework with its contained vessels stranded as membranous bridges of areolar tissue. They can also be distinguished along the course of the ducts actually

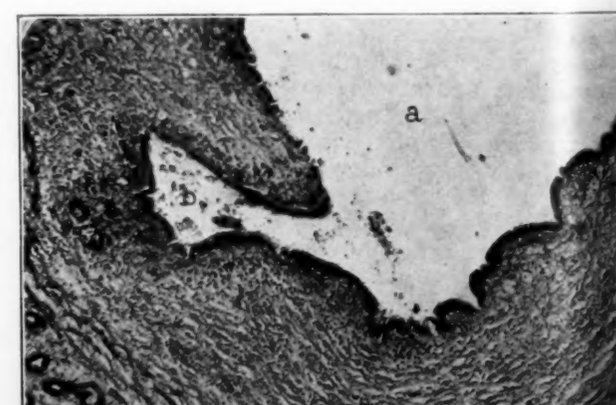

Fig. 3.—*a*, dilated bile duct with *b* parietal sacculus; marked infection around the sacculus.

within the parenchyma. Weber called these structures vasa aberrantia, and regarded them as functionless

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secretory tubules. Some actually communicate with hepatic cells and secrete bile, but the majority end blindly. The increase in number from fetal to adult life suggests their vestigial nature.

These two structures have much in common. They are almost entirely intrahepatic and occur on opposite sides of the ducts in two longitudinal rows, an arrangement shared by all branches of the major bile passage.

Fig. 4.—Marked fibrosis around the bile ducts from stones in the common duct: *a*, bile duct; *b*, portal vein; *c*, artery.

Structurally they are identical, being simple tubules or epithelial pockets lined by the same columnar epithelium found in the bile ducts themselves. They do not bear any resemblance to true glands, nor has it ever been shown that they behave like glands. The particular office of secreting the mucus of the bile can therefore hardly be assigned to them any more than to the epithelium of the biliary tract elsewhere which is well known to secrete mucus. Nor can we subscribe to the view that the parietal sacculi are accessory gallbladders, as suggested by Beale. Sweet finds, further, that the sacculi dilate following cholecystectomy, and that certain changes occur in the composition of the bile during this process. Our own experience is that this alteration in size is merely an expression of the general mild dilatation of the biliary tree which follows the loss of cholecystic activity. Probably both the parietal sacculi and the vasa aberrantia represent ductal remains, and as such do not play a specific part in the secretion or alteration of the bile during its passage to the duodenum. It is important to realize, however, that the bile ducts are surrounded from the largest to the smallest branches with an extensive and intricate system of tiny crypts admirably situated for the harboring of infection (fig. 3). Their dilated ends opening on the lumen of the duct by tiny orifices make them difficult to drain effectually.

EFFECTS OF OBSTRUCTION OF COMMON DUCT

Various investigators [13] have described the gross and microscopic picture of the liver following experimental obstruction of the common duct. Harley and Barrett [14] have shown that the degree of change depends on two factors, the duration of the obstruction and the presence or absence of infection. In general, it would seem that under aseptic conditions the result is progressive dilatation or hydrops of the entire biliary system with thinning and stretching of the walls of the duct and atrophy of the hepatic parenchyma. The surface of the liver is usually smooth, somewhat tense, and mottled green, the mottlings corresponding to the lobular markings. The hydrops may progress until the liver feels cystic, and varicose ducts may appear on the surface, especially around the edge of the left lobe. Microscopically, the canaliculi are filled with bile thrombi especially near the central hepatic veins; the hepatic parenchyma is atrophic, while the finer bile ducts at the periphery of the so-called hepatic lobules become numerous and tortuous. For a considerable time there is no leukocytic or lymphocytic infiltration and no perilobular fibrosis. Eventually such infiltration appears along the ducts, the hepatic cells at the bases of the acini atrophy and a slow deposition of fibrous tissue takes place in these situations, coincidental with the proliferation of the finest ducts. The ducts are at first filled with bile, but as time goes on this is replaced by the white mucus (a colloid substance) derived from the epithelial cells of the ducts. This change in color is brought about by the resorption of bile pigment by the epithelial cells, particularly in the absence of the gallbladder. At a much later date the whole organ shrinks and becomes finely granular or cirrhotic.

When this experiment is complicated by the presence of micro-organisms, a decidedly different pathologic picture is produced The close association of the deep lymphatics of the liver with the intrahepatic bile duct allows a rapidly ascending and extensively disseminated infection. The acute stage is marked by suppura-

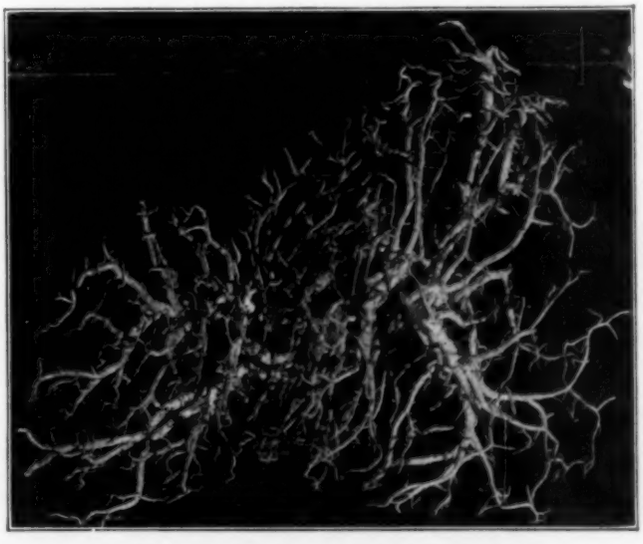

Fig. 5.—Benign stricture of common bile duct.

tive cholangeitis, with multiple hepatic abscesses around the terminal biliary ducts. The entire duct system is filled with bile-stained pus; the mucous membrane disappears, leaving a sloughing submucosa, and the walls and portal spaces are infiltrated with polymorphonuclear leukocytes. If the inflammatory process becomes chronic, proliferation of fibroblasts occurs with progressive thickening of the walls of the duct and later of the entire portal spaces. Submucosal infiltration by lymphocytes is prominent, particularly around the parietal sacculi. So extensive does this sclerosing process become

13. Legg, W. J.: On the Changes in the Liver which Follow Ligature of the Bile Ducts, St. Barth. Hosp. Rep. **9**: 161-181, 1873. Mayer, Heinrich, quoted by Legg, Weber (footnote 4).
14. Harley, Vaughan; and Barrett, Wakelin: The Experimental Production of Hepatic Cirrhosis, J. Path. & Bacteriol. **7**: 203-213, 1901.

that some of the smaller bile ducts are occasionally seen to be almost entirely obliterated by connective tissue.

An application of these studies aids in an understanding of the different varieties of obstruction in the liver of man. The three most common types with which the surgeon has to deal, as was previously stated, are choledocholithiasis, and benign and malignant stricture. The first and second are particularly important from the point of view of treatment. Pathologically, they have much in common. Intermittent obstruction is the rule in both instances, and they are practically always associated with a moderate or severe degree of infection. In cases of choledocholithiasis and benign stricture, the infection is usually of the chronic type. In the latter instance, it is undoubtedly derived from that previously present in the gallbladder and ducts. If the infection fails to subside and persists long enough, obliterative cholangeitis may occur and multiple strictures form. The effects are thus similar to those of septic ligation in experimental animals.

Malignant stricture is quite different, being characterized in the early stages by the absence of infection and by marked hydrohepatosis of the entire biliary system. Biliary cirrhosis is usually not noted, for the patient dies from other complications before it has time to develop. This, then, is entirely comparable to aseptic experimental ligation of the common duct.

CHOLEDOCHOLITHIASIS

Stones in the common duct and in the gallbladder are frequently associated with infection in the walls of the gallbladder and extrahepatic bile ducts. Moreover, they have usually been resident in the ducts for a long time, so that there is ample opportunity for the development of hepatic lesions of all grades of severity. The

Fig. 6.—Benign stricture; dilated bile duct with periductal fibrosis, cholangeitis and biliary cirrhosis: *a*, bile duct; *b*, fibrosis.

obstruction which they produce, however, is rarely continuous for their ball-valve action, as is well known, allow for intermittent periods of relief in which the liver and its ducts recover somewhat from the effects of biliary stasis. For this reason the intrahepatic portion of the biliary tree is not often excessively dilated, although the common duct may assume huge proportions to accommodate the stones within it (fig. 2). A more important feature in the limitation of the hydrohepatosis is the fibrosis of the ducts from the chronic cholangeitis which exists not only in the extrahepatic ducts but throughout the whole biliary system (fig. 4). The portal spaces become slowly thickened with fibrous tissue most marked around the bile ducts, and in these the mucosa is thrown into folds and may be either atrophic or hypertrophic. Submucosal infiltration with lymphocytes is prominent and, if this is taken as evidence of chronicity, it is clear that the parietal sacculi play an important part in harboring infection. It

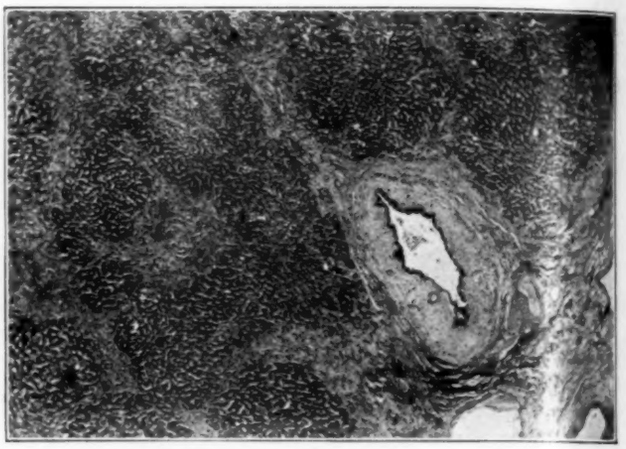

Fig. 7.—Benign stricture; marked biliary cirrhosis.

is particularly around the bases of these tiny crypts that the inflammatory cells are found. With no relief from obstruction, or with insufficient time for recovery following an obstructive period, the chronic cholangeitis slowly ascends to the finest bile ducts at their point of juncture with the hepatic acini. Here cell destruction takes place, with a resultant perilobular type of fibrosis and proliferation of ducts typical of obstructive biliary cirrhosis. With the destruction of the hepatic cells and their slight regenerative attempts, a fine granular appearance is given to the surface of the liver; this indicates that the process is far advanced.

BENIGN STRICTURE OF THE COMMON DUCT

Exclusive of the rarer varieties of benign stricture, such as those caused by tumors or glands, most of them have followed operations on the biliary tract and heretofore have been attributed to injury of the common duct inflicted at the time of operation. In reviewing our own cases we find it hard to believe that they are all the result of trauma. The clinical history and the appearance of the liver at necropsy in cases in which undoubted intermittent obstruction existed before operation, and many months elapsed before signs of stricture developed, suggest that generalized obliterative cholangeitis has been the chief factor. The strictures may here be multiple and extend up into the hilum of the liver, while the ducts themselves are sclerosed almost to the vanishing point throughout their whole extent, probably by the same process that is responsible for congenital obliteration of the bile ducts. Traumatic strictures, on the other hand, vary somewhat in their pathologic picture, depending on whether or not a biliary fistula is present. While the most severe hepatic lesions are associated with obliterative cholangeitis, those found with complete and permanent traumatic stricture may be similar; but if a biliary fistula is present and jaundice has never occurred, the injury may be slight. Biliary fistulas, however, show a strong tendency to close periodically with resultant intermittent obstruction, so that in general the pathologic picture

approaches that of the complete and permanent stricture.

One would naturally expect a traumatic stricture of the common duct to be followed by the same result as aseptic ligation. Such is usually not the case. In practically all, an infective process was already resident in the ducts previous to the operation at which the injury was inflicted. The retained bile is rapidly infected, and exacerbation of the chronic cholangeitis follows. Although moderate dilatation usually occurs, it is rarely extreme and may be absent altogether (fig. 5). Fibrosis of the ducts and portal spaces is marked and, produces a severe grade of obstructive biliary cirrhosis (figs. 6 and 7). The liver itself at operation is tense and bile-stained, and shows a finely granular surface if the obstruction has lasted more than a few months. The ducts at the hilum are frequently involved in a mass of scar tissue and require tedious dissection for identification. In long-standing cases they contain white bile, but a flow of typical green bile rapidly follows relief of the obstruction. The chronic cholangeitis and pericholangeitis, as in cases of choledocholithiasis, is evidenced by submucosal lymphocytic invasion particularly well marked around the parietal sacculi.

MALIGNANT STRICTURE OF THE COMMON DUCT

The malignant process that causes stricture of the common duct is, in almost every instance, in the head of the pancreas. It is comparatively rarely found in the wall of the duct or in the duodenum, stomach or gallbladder. The obstruction here is usually rapid and complete. Infection when present is a terminal event. The hydrohepatosis is extreme. The biliary tree, in common with the gallbladder, is dilated enormously, its walls thinned and sacculated and the smallest branches definitely varicose. At operation the liver is large and tense, with rounded edges and bile-stained, smooth capsule. The absence of biliary cirrhosis is noticeable. At necropsy the organ is smaller from collapse of the distended ducts, and on section has a cystic appearance and a spongy feel. Corrosion specimens of the biliary tree from such a case demonstrate better than anything else the extreme dilatation of the ducts and the atrophy of the parenchyma which must have occurred to accommodate them (fig. 8). Microscopically, the parietal sacculi have become absorbed into the stretched-out walls of the ducts, and there is little or no increase of fibrous tissue around the portal spaces nor any perilobular fibrosis. Atrophy of the hepatic columns is well marked, both from pressure of the dilated ducts and from the strangulating effect of the duct on the portal blood flow. In short, there is here a maximum of hydrohepatosis and a minimum of obstructive biliary cirrhosis, owing to the absence of the infective element and the shorter duration of the stasis of bile (fig. 9). Occasionally a case is encountered in which obstruction has lasted long enough for fibrosis to become quite extensive, but in general the patient dies before this takes place.

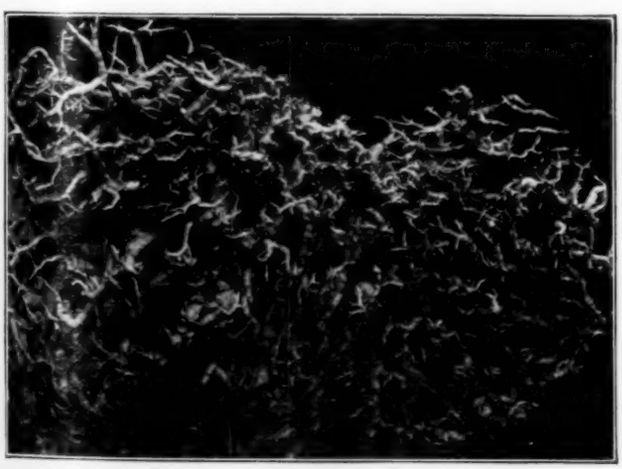

Fig. 8.—Malignant stricture of common bile duct.

Fig. 9.—Malignant stricture: *a* and *b*, extreme hydrohepatosis. The absence of infection and fibrosis may be noted; also *c*, strangulation of portal vein; *d*, hepatic artery.

COMMENT

The pathologic features of choledocholithiasis and benign strictures are almost identical. Chronic cholangeitis with moderate or little dilatation of the ducts predominates. The long duration of the obstruction is usually sufficient for the development of severe biliary cirrhosis, modified, of course, by the presence of a biliary fistula or intermittent obstruction.

On the other hand, malignant occlusion occurring in otherwise clean and uninfected ducts produces severe hydrohepatosis with little or no biliary cirrhosis. Cholangeitis is absent except as a terminal event, and is then usually acute. One might indeed say that Courvoisier's law is entirely applicable to the whole biliary system as it is to the gallbladder and common duct, and that the condition of the gallbladder may be taken as an index of the condition of the biliary system in general. If it is small, fibrotic and contracted on stones, the ducts themselves are probably not particularly dilated following obstruction of the common duct, although they may be surmised to be the seat of a more or less marked degree of chronic cholangeitis. If the gallbladder is dilated, thin-walled and free from stones, as occurs in carcinomatous obstruction at the head of the pancreas, the intrahepatic biliary tree is also probably tremendously dilated but free from infection.

Such a condition is practically hopeless from a curative point of view, and the most that can be accomplished is the relief of jaundice by cholecystogastrostomy. With regard to choledocholithiasis and benign stricture, one cannot lay too much stress on the early relief of obstruction. Drainage of the infected biliary system is essential before jaundice becomes profound or the hepatic injury advanced. In infected

cases the task of successfully reconstructing a constricted duct becomes exceedingly difficult and often quite hopeless, especially when adhesions and scar tissue tie the ducts at the hilum into a dense mass. It is questionable whether in such cases the general cholangeitis is completely relieved by any procedure once the network of tiny crypts along the walls becomes chronically infected, and whether this may not be responsible for the persistent postoperative symptoms.

SUMMARY

Stones in the common duct and benign traumatic stricture, by reason of their longer duration and associated chronic cholangeitis, produce only moderate hydrohepatosis and varying degrees of biliary cirrhosis. The gallbladder is contracted. Malignant stricture of the common duct is associated with marked hydrohepatosis and parenchymal atrophy but with little or no biliary cirrhosis. The gallbladder is usually markedly dilated. Courvoisier's law applies as well to the intrahepatic biliary system as it does to the gallbladder and common duct, and the condition of the latter is an index of the changes in the former. The parietal sacculi are a factor in harboring chronic infection, and the early relief of obstruction is essential.

ABSTRACT OF DISCUSSION

Dr. Alexius McGlannan, Baltimore: Those who have studied Dr. Counseller's specimens in the Scientific Exhibit have no difficulty at all in concluding that chronic dilatation or chronic obstruction of the bile ducts has far reaching and very serious effects on the function of the liver cells, as well as the very definite effects on the structure of the tissues in the neighborhood of the cell. This paper shows that there is reason for the surgeon's plea for early intervention in gallbladder disease; that there is an explanation for the unsatisfactory results so often noted after late intervention in gallbladder disease, and that there is need for study of the liver from many points of view, with the hope that tests may be discovered by means of which we may learn the condition of the liver cell in relation to functions other than the biliary one. The work of experimental investigators and such clinical and pathologic studies as those done by Gordon Heyd and his associates in New York, are very valuable. Wilensky has just published in the *Archives of Surgery* a preliminary study of the liver cell, and the chemical changes that go on in the liver cell associated with nitrogen metabolism and secretion. Chronic infection is the common etiologic factor in most diseases of the gallbladder. Fibrosis and obstructive jaundice as shown here are produced with changes in the nutrition and the functional activity of the liver cells. The degree and permanence of the functional derangement of the cell is proportional to the duration and intensity of the obstructive fibrosis. Malignant stricture of the common duct is, of course, a hopeless condition for cure of the patient. The great comfort that can be given such a patient whenever a short circuiting operation is possible shows the serious effect of unrelieved persistent back pressure in the biliary ducts on the function of the liver cell.

Dr. C. S. McVicar, Rochester, Minn.: Dr. Counseller's vivid demonstration of the effect of common duct obstruction on the intrahepatic biliary system marks an advance in our knowledge of diseases of the liver. He has indicated the need for prompt surgical relief of obstruction to the common duct, since unrelieved obstruction threatens the parenchymal and vascular integrity of the liver. The indications for surgery are not restricted to benign obstructions. Pancreatic neoplasms are frequently of slow growth, and although ultimately fatal, the life of the patient may be materially prolonged by appropriate surgical measures which prevent death from obstructive jaundice. It must be admitted that progress in the study of the function of the liver has been slow. This does not mean that the idea behind the attempt to study function has been faulty. It has first of all been necessary to study methods. We had all hoped that when the liver was injured we would be able to demonstrate a proportionate disturbance in blood sugar regulation, or a measurable defect in the detoxication of protein, and so forth. It is now pretty well established that methods so far advocated fail to show quantitative disturbances in metabolism proportionate to demonstrable structural change in the organ. Some excuse for this failure may be attributed to the large functional reserve of the liver, but the hope for the future really depends on the development of new methods which will be, not necessarily more precise, but more subtle in the detection of dysfunction. In the absence of jaundice, a measure of the rate at which the liver removes certain specific dyes from the circulation has been of definite value in diagnosis and prognosis. This is assumed to be a measure of the excretory function of the liver. But in the case of mechanical interference with completion of the function of excretion, such as exists in obstruction of the extrahepatic bile ducts, the dye method may give an exaggerated idea of that part of excretory function which depends on the activity of parenchymal cells.

Dr. V. E. S. Counseller, Rochester, Minn.: I think that it is very important for the clinician to connect the hepatic tests with the pathologic changes which I have just demonstrated. I omitted mentioning that formerly we thought that most of the benign strictures were due to trauma from previous surgical operations on the gallbladder and ducts, but after reviewing this series, we believe that this is probably not true and that there is a slow fibrosing process producing obliterating cholangeitis. A traumatic stricture produces obstruction immediately after operation, whereas a stricture may occur five or six months later. It does not seem quite fair to debit surgery with that type of stricture. Moreover, if the biliary tree is examined carefully, not only will obstruction of the common duct be found at the hilum but also multiple obstructions throughout the entire biliary tree, as a result of fibrosing effect which I have illustrated in the slides.

ORGANIC TUBERCULOSIS IN MAN ANALYZED FROM POSTMORTEM AND EXPERIMENTAL DATA*

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Probably the three most striking characteristics of tuberculosis as seen in man at postmortem are its predominant pulmonary localization, its extension bronchogenically by aspiration in the lung, and evidences of its variegated hematogenous dissemination. The predominant pulmonary disease has been attributed in the past to the importance, in the majority of the cases, of the respiratory tract as the route of infection in tuberculosis [1] and to the filtering action of the lungs, supposedly called into play frequently, especially in infancy and childhood, when infection is believed to occur through the alimentary tract.[2] In tuberculosis, especially in childhood, the lymphatic system has been considered to assume importance,[3] and Krause,[4] on the basis of exten-

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2. Ravenel, M. P.: Present Views in Respect to Modes and Periods of Infection in Tuberculosis, J. A. M. A. **66**: 613-618 (Feb. 26) 1916.

3. Harbitz, Francis: Tuberculosis of Lymph Nodes: Frequency, Origin and Relation to Other Tuberculous Lesions, Especially Pulmonary Tuberculosis, J. Infect. Dis. **21**: 196-218 (Aug.) 1917.

4. Krause, A. K.: Studies on Tuberculous Infection: VI. Tuberculosis in the Guinea-Pig After Subcutaneous Infection with Particular Reference to the Tracheobronchial Lymph Nodes, Am. Rev. Tuberc. **4**: 135-192 (May) 1920; XIV. The Localization of Tuberculous Infection in the Rabbit, with Particular Reference to That in the Lungs, ibid. **14**: 243-270 (Sept.) 1926; XV. Summary, Analysis and Applications of the Studies on Tuberculous Infection, ibid. **14**: 271-305 (Sept.) 1926.

sive studies in the guinea-pig and rabbit, considers intrapulmonary differences of lymphatic tissue, blood supply and lymph flow decisive in determining the characteristic differences of pulmonary involvement in these two species. Deposition of the bacilli and lymphoid tissue are believed to explain some of the differences in the other organs of these animals.

An analysis recently made [5] of the variability of the localization of tuberculosis in the organs of different animals, the rabbit, guinea-pig, dog and monkey, disclosed that in determining the tuberculous involvement of the organs, the oxygen tension of the source of oxygen is important in explanation of the greater tuberculous involvement of the lung as compared with the liver in all the species considered. In spite of the fact that the localization of bacilli in the lungs of all these species following intravenous injection of living tubercle bacilli is less than in the liver or spleen, the greatest amount of tuberculosis usually develops in this organ. In addition, the ability of the cells of the tubercle of the different organs to destroy tubercle bacilli, as expressed in the cellular reaction, assumes importance, especially in explaining the irregular organic involvement in these species of animals not accounted for by the deposition or growth of the bacilli. Thus the susceptibility of the guinea-pig's spleen and the dog's liver, in contrast to the resistance of the dog's spleen to tuberculosis, becomes intelligible. The rôle of cellular reaction and the growth of the bacilli are relatively more important in tuberculosis in the resistant animals, such as the rabbit and the dog, while in the less resistant animals, such as the guinea-pig and the monkey, the distribution of the bacilli assumes a more commanding position.

In an earlier paper [6] on organic tuberculosis it was pointed out that the significance of the organic reaction to tuberculosis in man could be approximated only indefinitely from the then available clinical and autopsy reports, since none of these were presented except in crudest quantitative form. It was also suggested that there are many obstacles to drawing more than inferences from the human postmortem data available, and that a few of these must be borne in mind when drawing conclusions on organic tuberculosis in man. It is obvious from clinical and autopsy observations that pulmonary tuberculosis predominates in adult man and, though not usually stressed, the same predomination appears to be the case in the child when lymph node involvements are excluded from consideration.[7] When attempting to explain the predominant pulmonary involvement in man on the basis of any preferred conception, a maze of controverting evidence is faced, which would seem to make the choice of a happy medium probably the safest. If the aerogenic route of pulmonary infection in tuberculosis is chosen, there remains little else necessary to explain the predominant pulmonary involvement, and yet there may be factors easily dismissed but even more or equally important as determinants in developing the picture of tuberculosis as seen in man. The possibility that the lung is more favorably situated for the growth of tubercle bacilli on account of its higher oxygen tension than is any other organ in the body has been given little, if any, consideration in the past, and yet the consistent observations in all the animal species studied make this seem an obvious factor in contributing to the predominant pulmonary involvement in tuberculosis in man.

In a tentative survey of the organic reaction in man made from a study of the available data in the literature and the conditions observed in experimental animals, it was suggested that a fairly close approximation might be obtained by comparing natural hematogenous generalization of the disease in man with experimental hematogenous infection in animals. In this light, it was suggested that man more closely resembles the rabbit than the other three species of animals studied (guinea-pig, dog and monkey) in his organic reaction to tuberculosis, in that, considering seeding after hematogenous dissemination to be about the same as that found in the animals, the spleen becomes more involved than the liver, and the kidney is least involved of these three organs. Many reservations were, however, necessary in making these interpretations, in that the liver involvement appeared more nearly to approximate that of the spleen of man, making it seem likely that the lower oxygen tension of this organ in man is counteracted by a diminished ability of the cells of the tubercle of the liver of man to destroy tubercle bacilli as compared with the cells of the tubercle of the liver of the rabbit, and in that the kidney of man appears to be less resistant to tuberculosis than the kidney of the rabbit, possibly accounted for by the cellular factor. In these interpretations, however, the stamp of accurate quantitative analysis was lacking, as well as a consideration of the possible bearing of other organic involvement, such as intestinal, peritoneal or mesenteric gland, on the disease in the organ in question; this, together with the wide variations recorded by different observers, and a lack of uniformity in method, makes the data unsuitable for satisfactory comparison with experimental data.

The following gross and microscopic studies of 106 autopsies on men who died of tuberculosis were made to overcome, as far as possible, the foregoing criticisms and to analyze organic tuberculosis in man more accurately than was possible by utilizing the data in the literature alone. The 106 cases of tuberculosis analyzed were submitted to an exhaustive and careful autopsy, and sections of the tissues from the various organs were stained by means of hematoxylin and eosin after fixation in Zenker's solution. The average age of all the patients was 32 years, with a minimum age of 17 years and a maximum of 55 years. So far as could be determined, the age proved of no particular interest, within the range studied, with regard to a difference in organic reaction to tuberculosis. For the purpose of studying the organic reaction to tuberculosis, certain obvious conditions had to be accepted in choosing the material from the 106 cases suitable for satisfactory analysis of the cellular reaction.

Although large tubercles were considered in evaluating gross tuberculosis, only such sections were accepted for cellular organic analysis as contained microscopic discrete tubercles, and in sufficient numbers in the tissue sections so that their relative sizes would be susceptible of comparative analysis. A solitary tubercle in a section,

5. Corper, H. J., and Lurie, M. B.: The Variability of Localization of Tuberculosis in the Organs of Different Animals: I. Quantitative Relations in the Rabbit, Guinea-Pig, Dog and Monkey, Am. Rev. Tuberc. **14**: 662-679 (Dec.) 1926; II. The Importance of the Distribution of Tubercle Bacilli as Concerns Difference of Susceptibility of the Organs, ibid. **14**: 680-705 (Dec.) 1926; IV. The Cellular Factor in the Susceptibility of the Various Organs, **15**: 237-269 (Feb.) 1927. Corper, H. J.; Lurie, M. B., and Uyei, Nao: III. The Importance of the Growth of Tubercle Bacilli as Determined by Gaseous Tension, ibid. **15**: 65-87 (Jan.) 1927.

6. Corper, H. J.; Lurie, M. B., and Uyei, Nao: V. The Significance of Localization and Development of the Bacilli, and of the Cellular Reaction in Man and Animals, Am. Rev. Tuberc. **15**: 389-398 (March) 1927.

7. Hand, A., Jr.: Autopsy Statistics at the Children's Hospital with Reference to Tuberculosis and Its Etiology, Arch. Pediat. **20**: 247-250, 1903. Hedren, G.: Pathologische Anatomie und Infektionsweise der Tuberkulose bei Kinder, besonders der Säuglinge, Ztschr. f. Hyg. **73**: 273-323, 1913. Schwaitzar, V.: Zur Frage der primären Lokalization des tuberkulösen Processes im Säuglingsalter, Ztschr. f. Tuberk. **42**: 469-470, 1925.

or a diffuse tuberculosis, was considered sufficient reason for excluding the section from those accepted as suitable for analysis. On the basis of the microscopic examination of the spleen, liver and kidney, the 106 cases of tuberculosis submitted to analysis were divided into a positive or satisfactory group in which all of these three organs were found suitable for making an accurate count of the tubercles present as well as for measuring their size. If one organ was found to contain a sufficient

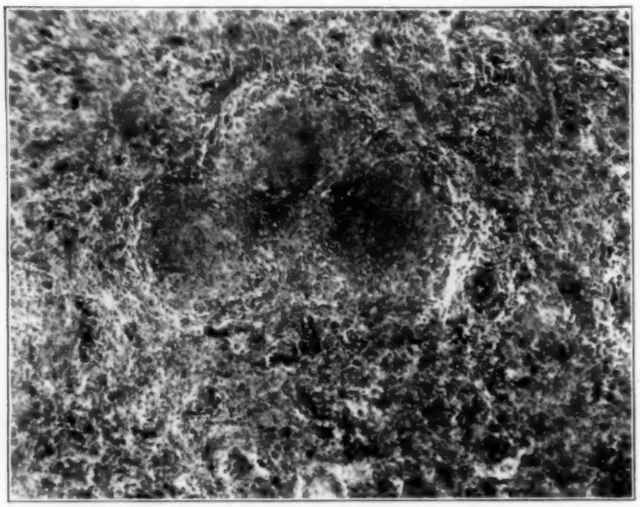

Fig. 1.—Extent of tuberculosis in the spleen after hematogenous dissemination in a man, aged 31, with chronic ulcerative pulmonary tuberculosis complicated with empyema, enteritis and laryngitis. The kidneys were normal microscopically.

number and suitable unquestioned tubercles microscopically, and the other two organs were negative, this case was also recorded as acceptable or positive, +. Of the 106 cases examined, twenty-five were + or suitable for satisfactory analysis. If the tissue sections contained too few tubercles for satisfactory comparison, they were classed under unsuitable but positive, ⊕. Of the 106 cases there were sixteen of these. The sections were classed as positive questionable, +?, when the tubercles though miliary appeared to be of different ages in the different organs, or if one organ was satisfactory and one of the others proved unsatisfactory because the tuberculosis was of a diffuse nature or could not be satisfactorily read for other reasons. There were seven +? cases, leaving a total of fifty-eight negative cases in which no microscopic evidence of tuberculous involvement was found in either the spleen, liver or kidney. These three organs were chosen for analysis since, aside from the lungs, which could not be analyzed because of the usual marked involvement and the obvious complication of the respiratory route of infection in tuberculosis, these were the organs in which evident deposition of bacilli occurred after intravenous injection in animals, and in the order of spleen, liver and kidney according to the amount seeded and in which by analogy it was logical to expect deposition following hematogenous dissemination in man, which is borne out in addition by autopsy records.

In order to make the examinations of these organs quantitative, each section was measured and its area computed, the number of tubercles counted in the entire area, and their size recorded by measuring the diameter twice, at an angle of 90 degrees to each other. The average of the two measurements of the diameter of the tubercle was recorded, because in estimating size either as area or as volume these figures would prove satisfactory for comparison, since the area of a circle or volume of a sphere may be taken as a function of the radius or diameter.

The various clinical and postmortem features of the 106 cases were classified according to the four groupings +, ⊕, +? and 0 in order to note any possible bearing of these on the organic reaction. Of the twenty-five + or suitable cases, twenty-two were recorded as being cases of chronic active pulmonary with pulmonary cavities; two as pulmonary miliary, and one as pulmonary inactive; of the twenty-three ⊕ or +? unsuitable but positive cases, all were chronic active pulmonary cases with pulmonary cavities, and of the fifty-eight negative cases without evidence of microscopic tuberculous lesions in the spleen, liver and kidneys, fifty-four were chronic active pulmonary cases, fifty-three with pulmonary cavities, and four were pulmonary inactive cases. Of the twenty-five + cases, four showed a spontaneous pneumothorax, and four empyema; of the twenty-three unsuitable cases, five showed a spontaneous pneumothorax, and three an empyema; while of the fifty-eight negative cases fourteen had a spontaneous pneumothorax and six an empyema. Tuberculous meningitis occurred in four of the twenty-five + cases, in one of the twenty-three unsuitable, and in four of the fifty-eight negative cases. Ulcerative laryngitis was found in nine of the + cases, in five of the unsuitable cases and in five of the negative cases. Tuberculous peritonitis occurred in none of the + cases, in one of the unsuitable cases and in six of the negative cases. Tuberculous mesenteric glands were present in two of the + cases, in none of the positive unsuitable cases, and in four of the negative cases. Surgical tuberculosis, including bone and joint disease, was present in six of the positive cases, in two of the positive unsuitable cases, and in one of the negative cases.

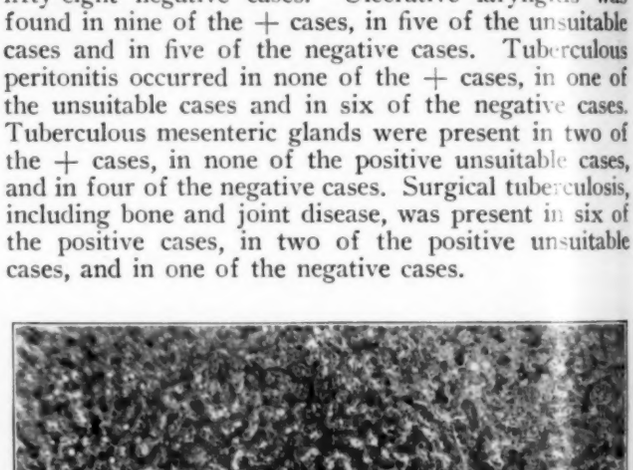

Fig. 2.—Extent of tuberculosis in the liver after hematogenous dissemination in an adult; same case as in figure 1.

From these figures it would appear that pulmonary cavities, spontaneous pneumothorax, empyema, peritonitis, and mesenteric glands do not exert a decisive influence on the development of a miliary tuberculosis in the spleen, liver or kidney. Ulcerative laryngitis and surgical tuberculosis were more prevalent in cases of miliary involvement of the spleen and liver. Amyloidosis appeared to be more prevalent in the spleen, liver and kidneys of the negative cases.

Oppenheim [8] points out the possibility of ulcerative intestinal disorders having a bearing on inflammatory diseases of the liver, and believes that the pathogenic agent reaches this organ by way of the portal vein. The high incidence of ulcerative enteritis in patients dying of pulmonary tuberculosis makes it appear advisable not to overlook this factor in the causation of the liver involvement in man. Intestinal ulcers were present in

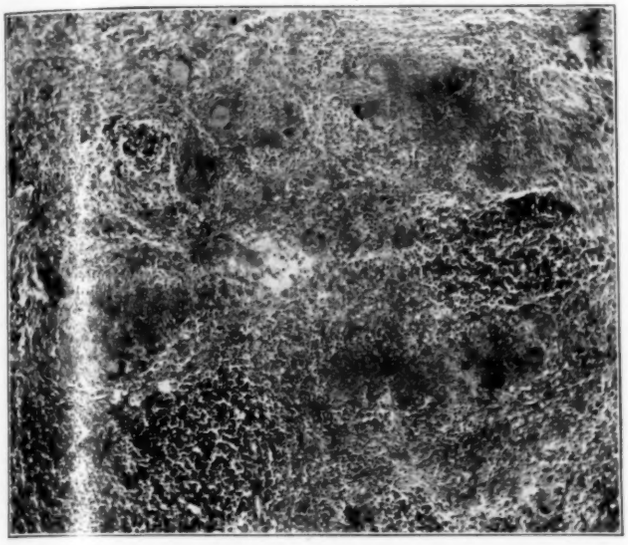

Fig. 3.—Extent of tuberculosis in the spleen after hematogenous dissemination in an infant, aged 4 months, with generalized miliary tuberculosis. The kidneys were normal.

eighteen (being extensive in fifteen) of the twenty-five positive microscopic cases; in seventeen (extensive in thirteen) of the twenty-three unsuitable positive cases, and in thirty-one (extensive in twenty-one) of the fifty-eight negative cases. Among the ten positive microscopic cases showing splenic but not liver or kidney involvement, six presented intestinal ulcers (five being extensive) and among the five positive microscopic cases showing hepatic but not splenic or kidney involvement, three presented extensive intestinal ulcers. It would appear from these observations that the presence of intestinal ulcers in cases of pulmonary tuberculosis does not play a decisive rôle in determining miliary hepatic involvement.

Solitary tubercles, in the absence of miliary dissemination, are recorded for almost every organ in the body, and, although not common, bear evidence of the ever present danger of hematogenous flooding in any case of tuberculosis. Solitary tubercles also cannot be construed as bearing evidence in any way on the organic reaction to tuberculosis since they are dependent rather on an accidental lodgment of a single large tuberculous embolus. Yet true to form, even these large tuberculous emboli do bear some relation to the general laws of the deposition of particulate material after introduction into the circulation, in being found more frequently in certain locations. On the basis of the presence of gross and microscopic, solitary or miliary, tubercles the following observations were attained in the 106 cases studied for the kidney: In twenty-five positive cases suitable for microscopic analysis for organic reaction to tuberculosis, there were found seven kidneys with gross solitary tubercles and one with gross miliary tubercles; three with solitary microscopic tubercles, and one with miliary microscopic tubercles. In the twenty-three unsuitable positive cases there were found three with gross solitary tubercles and one with gross miliary tubercles; two with solitary microscopic tubercles and none with microscopic miliary tubercles; while of the fifty-eight negative cases there were eight with gross solitary tubercles and one with microscopic solitary tubercles in the kidney.

The infrequency of gross or microscopic miliary tuberculosis in the kidney of man, as compared to solitary tubercles in this organ and to the miliary disease in the spleen and liver, is distinctly evident from these figures. In the spleen there were found among the twenty-five suitable positive cases one with gross solitary and one with gross miliary tubercles, none with microscopic solitary and twenty-five with microscopic miliary tubercles; among the twenty-three positive unsuitable cases, one with gross solitary and three with gross miliary tubercles, and eight with microscopic solitary and eight with microscopic miliary tubercles; of the fifty-eight negative cases, four with gross solitary tubercles and one with miliary tubercles; and microscopically one had a diffuse questionable involvement. In the liver there were found among the twenty-five suitable positive cases three with gross solitary and four with gross miliary tubercles, and four with microscopic solitary and fourteen with microscopic miliary tubercles; among the twenty-three unsuitable positive cases two with gross solitary and three with gross miliary, and seventeen with microscopic solitary and two with microscopic miliary tubercles; among the fifty-eight negative cases, three with gross solitary tubercles; none with gross miliary tubercles and two with diffuse microscopic involvement.

It is evident from these figures that the kidneys in man, relatively speaking, are more frequently the seat

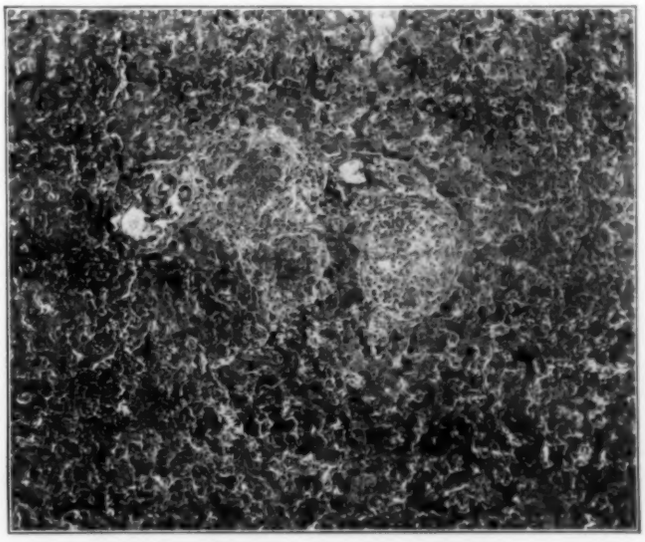

Fig. 4.—Extent of tuberculosis in the liver after hematogenous dissemination in an infant; same case as in figure 3.

of solitary tubercles and less frequently of miliary tubercles than the liver and spleen.

The foregoing data make it clear that only those cases can be of service in evaluating the organic reaction to tuberculosis in the spleen, liver and kidney of man in which the tubercles are of sufficient number so that when deposit in these organs occurred it conformed to the laws governing the deposit of particulate matter

8. Oppenheim, F.: Review of One Hundred Autopsies of Shanghai Chinese, China M. J. **39**: 1011-1026, 1067-1076 (Nov.-Dec.) 1925.

from the general circulation, and occurred at approximately the same time, or if it occurred in several showers the conditions would be equal for the several organs being compared. With this in mind it is obvious that a tabulation of any questionable cases would only be confusing, and therefore the summary of the readings obtained with the organs in the twenty-five suitable cases is recorded in the accompanying table.

The Organic Reaction to Tuberculosis in the Spleen and Liver of Man

Organ		Spleen			Liver *		
Number of Cases		Square Millimeter of Tissue Examined	Number of Tubercles Per Square Millimeter	Diameter in Millimeters of Tubercle Per Square Millimeter	Square Millimeter of Tissue Examined	Number of Tubercles Per Square Millimeter	Diameter in Millimeters of Tubercle Per Square Millimeter
	Maximum.	68†	0.33	0.009	...	0	.....
7	Average...	47	0.20	0.007	...	0	.....
	Minimum..	27	0.08	0.004	...	0	.....
	Maximum.	130	1.18	0.017	119	0.08	0.006
18‡	Average...	62	0.44	0.006	63	0.23	0.003
	Minimum..	27	0.03	0.002	30	0.02	0.001

* In only three of the twenty-five cases was the average number of tubercles in the liver slightly greater than or equal to those in the spleen, and in two of them the average size of the tubercles was equal or slightly greater.

† The maximum or minimum figures given under the headings "square millimeters examined, "number of tubercles per square millimeter" and "diameter of tubercles per square millimeter" are not from a single specimen but are the actual maximum or minimum of all the figures obtained.

‡ The kidneys were positive in only four of the eighteen cases in which both the spleen and the liver were positive, and in only one of these cases were the tubercles suitable for quantitative estimation; in none of the seven cases in which the spleen alone showed miliary tubercles were the kidneys positive.

In evaluating the data recorded in the table, it seems safe to assume, from the foregoing data in this paper, that the reactions as determined by the number and size of tubercles in the spleen, liver and kidney are not appreciably influenced by such extraneous factors as intestinal or other organic tuberculous involvement, but are the result of a true organic reaction determined by the same factors—localization of the bacilli or seeding, oxygen tension of the source of oxygen and cellular reaction—as were found to be significant in the earlier experimental studies on the rabbit, guinea-pig, dog and monkey.

Although the detailed data from the eighteen cases in which both the spleen and the liver contained suitable tubercles naturally revealed wide variations between the different cases, the observations were fairly consistent in the majority of cases in that the number and size of the microscopic miliary tubercles in the spleen exceeded those in the liver of the same case. The relation was approximately an average of about 4 or 3 to 2 for both numbers and size, with a maximum extreme of 6 to 1 for numbers as well as for size. Since the liver occupies an unfavorable position as compared to the spleen in all the animals examined, both with regard to its oxygen supply source and the seeding or deposition of bacilli entering the circulation, and since it seems fair to assume that the same conditions apply to man, it would appear that the cellular reaction of the liver of man closely approximates that of the spleen and that the difference in organic reaction to tuberculosis may be accountable to the deposition of the bacilli from the circulation and the oxygen tension of the source of oxygen in this organ.

Although the tissues of only two infants were available for analysis, these cases would make it appear that the splenic and hepatic, as well as kidney, organic reaction in infants did not differ materially from that of adult man. The tissues in one of the cases were obtained from an infant 4 months of age dying of a generalized miliary tuberculosis involving especially the lungs, liver and spleen, and the average number of the splenic tubercles was 1.26 of 0.008 millimeter diameter per square millimeter, 75 square millimeters being examined; while the average number of hepatic tubercles was 0.436 of 0.002 millimeter diameter per square millimeter, 94 square millimeters of tissue having been examined. In the second case, an infant 4½ months of age had an ulcerative pulmonary tuberculosis with cavities in the left lung. The mediastinal, mesenteric and retroperitoneal glands were all involved, and there was a solitary macroscopic tubercle in the spleen but none in the liver. The kidneys were negative macroscopically, but contained a few isolated tubercles microscopically. The average number of splenic tubercles was 1.43 of 0.011 millimeter diameter per square millimeter, 42 square millimeters being examined, while the average number of hepatic tubercles was 0.348 of 0.004 millimeter diameter per square millimeter, 68 square millimeters of tissue having been examined.

SUMMARY AND CONCLUSIONS

Adult man displays a decided resistance to spontaneous human tuberculosis and thus resembles the rabbit and dog, as compared to the susceptible guinea-pig and monkey. Contrary to general conception, the child also appears to display a decided resistance to spontaneous infection. In addition to the favorable location of the lungs for the aerogenic route of infection, it appears that this organ has the added disadvantage, so far as the welfare of man is concerned, in being especially favorably situated (from the standpoint of available oxygen) for the development of the bacilli, thus contributing to the predominance of pulmonary organic tuberculosis in man. A quantitative analysis of the splenic and hepatic organic reaction, as well as of the kidney reaction, in adult man in the light of the knowledge gained through the study of the organic reaction in experimental animals indicates that the human liver is about as resistant to tuberculosis as that of the human spleen, and that the greater average number and size of tubercles in the latter organ after hematogenous dissemination is due to the difference in the factors of deposition and oxygen tension of the source of oxygen in these organs. The lower frequency of miliary kidney involvement in man after hematogenous dissemination may be accounted for by the lesser deposition of bacilli from the blood stream. In organic cellular reaction the human spleen, liver and kidney more nearly resemble that of the rabbit than any of the other animals studied. Pulmonary cavities, spontaneous pneumothorax, empyema, peritonitis and tuberculous mesenteric glands did not exert any influence on the development of miliary tubercles in the spleen, liver or kidney. Ulcerative laryngitis and surgical types of tuberculosis were more prevalent in cases of miliary tuberculosis of the spleen and liver, while the reverse was true of amyloidosis of the spleen, liver and kidneys. Ulcerative tuberculous enteritis does not play a decisive rôle in determining miliary hepatic involvement in adult cases. The organic reaction to tuberculosis of the spleen, liver, kidney and probably the lung in the infant does not appear to differ appreciably from that of adult man.

POSTURE STUDIES IN GYNECOLOGY*

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Development and advance in our knowledge of obstetrics and gynecology have been among the outstanding achievements in the field of medicine in the past twenty-five years. Analysis of this advance will show that it has been confined chiefly to the more uncommon and unusual conditions. Among methods of treatment, the tendency toward conservatism is probably the most noteworthy recent advance. Diagnosis and diagnostic procedures have in general kept pace with this progress. On the whole, however, it would seem that the advance is more apparent than real, since we are still faced with most of the common gynecologic complaints which have existed unchanged for hundreds of years. Young women are still suffering from dysmenorrhea, menorrhagia, leukorrhea, backache, and vague pains in the sides, while older women have grown to look on these conditions as normal. Many physicians have come to consider these common complaints as more or less natural and unavoidable, and few today show any enthusiasm when consulted because of them. Yet these very complaints make up the bulk of our gynecologic troubles. Search for local pathologic conditions to account for these symptoms, particularly in young unmarried women, is generally futile and in treatment we are still pinning our faith to local applications of one kind or another. Our methods have become so numerous, so varied both in procedure and results, so nonspecific and fruitless, that many do not hesitate to admit their helplessness; indeed, some feel that a girl with dysmenorrhea today should consult her physician as a last resort rather than from first choice. I have been impressed with the frequent occurrence in the same individual of such common gynecologic complaints as dysmenorrhea, menorrhagia, leukorrhea and backache, and because of this association feel that there must be a common underlying factor.

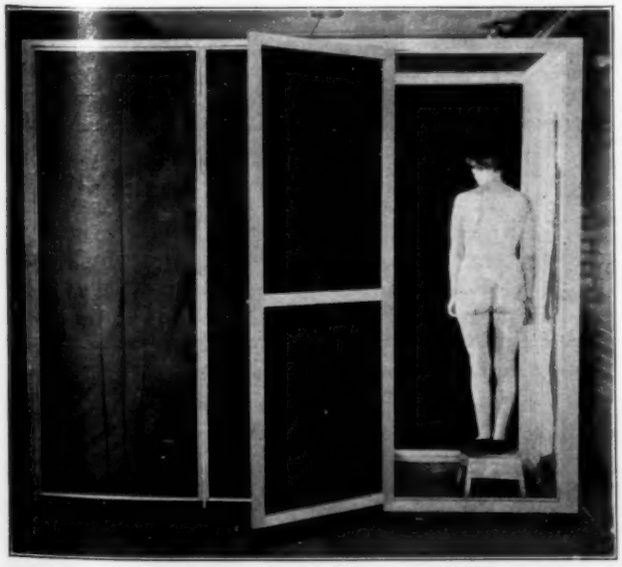

Fig. 1.—Side view of tunnel used in obtaining silhouettographs.

The fact that exercise and body development have reduced the frequency of dysmenorrhea in certain groups of women would indicate that the cause for this symptom may be found in faulty physical condition rather than in essentially local lesions. Orthopedists have advanced the knowledge regarding posture to a very marked degree, Goldthwait [1] especially having taught us much regarding body mechanics. Physical educationists have, in a general way, pointed out the relationship between posture and the various symptoms common to women. They have been handicapped, however, in two respects: first, in that they have not often encountered the pathologic conditions seen by the physician, and, secondly, in that they have not had the cooperation which should come from the gynecologist. Both groups of workers are vitally interested in the health and welfare of women, and could readily be of mutual assistance. The gynecologist has a twofold reason for being interested in body mechanics, for he must consider not only the orthopedic point of view, but also the very arrangement of a woman's pelvic organs; and the stress and strain to which they are subjected makes this knowledge essential.

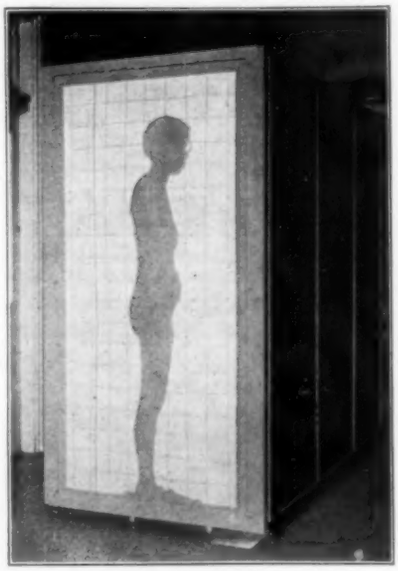

Fig. 2.—End view of tunnel used in obtaining silhouettographs.

Observations in the past have been indefinite but illuminating, and it would seem that further study along this line may result in a distinct contribution to our gynecologic knowledge.

Those who have pioneered in this work have developed very satisfactory methods of studying posture, and today three principal methods are available. Actual photography is used by some, but this has been largely replaced by the schematograph and silhouettograph.

The schematograph permits tracing of the individual's outline in a much reduced form, while the silhouettograph is an actual photograph of the individual's shadow picture. In this clinic the silhouettograph is being utilized (figs. 1 and 2). An 8-foot tunnel constructed of black muslin cloth covering a wooden framework is used; the screen, of oiled linen, is fastened to a separate frame in the front and is thus detachable, while a door permits access to the tunnel. The entire apparatus rolls on casters, and can readily be taken apart should the occasion arise. This tunnel arrangement for taking silhouettographs does away with undue exposure, one of the undesirable features of posture study. In addition to the silhouettograph, actual measurements are taken, including the breadth of the shoulders; the depth and circumference of the

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Eighth Annual Session of the American Medical Association, Washington, D. C., May 19, 1927.

1. Goldthwait, J. E.: An Anatomic and Mechanistic Conception of Disease, Boston M. & S. J. **172**: 881 (June 17) 1915.

chest just below the breasts in the normal and in the expanded condition; the abdominal circumference, measured at the umbilicus, and again 2 inches below; the circumference of the hips, and finally the depth of the lumbar curve, the costal angle, and the angle of pelvic inclination. These measurements and the history especially pertaining to the patient's symptoms are recorded on cards used for this purpose and filed with the patient's silhouettograph for further study. The schematographs in this series were obtained from the Department of Physical Education for Women.[2] These traced outlines readily permit of comparison with the silhouettograph, so that no difficulty is encountered because of any difference in the methods of recording the posture.

Considerable leeway was allowed in classifying individuals as to poise and general body tone, for it is my belief that the sharply defined classification of posture as generally accepted today is not entirely satisfactory. In this study, a good body poise and general muscle tone were looked on more favorably than the straight backed posture so preferred at the present time. When silhouettographs were taken or when tracings with the schematograph were made, the individuals were asked to assume a natural stance, since there is always the possibility of the individual tightening up and thus permitting a false portrayal of the body outlines. There seems to be less of this conscious effort to tighten up in the use of the tunnel and silhouettograph than with the schematograph, for in the tunnel the patient does not feel so exposed and is therefore less conscious of observing eyes. When the pictures obtained were studied, the tilt of the head, the curve of the shoulders, the position of the chest, the degree of relaxation of the abdominal wall and the extension of the thighs were considered. A moderate curve in the lumbar spine was considered more desirable than a flat back. Good body poise was revealed by a head well balanced on the body, by the absence of a flat chest, and by good abdominal support. The boardlike abdominal wall of a strained position must not be confused with good abdominal support. The pictures obtained were classified as good, fair or poor. Examples of each are shown in figures 3, 4 and 5.

In a study of seventy-two young women without dysmenorrhea, twenty-seven, or 37.5 per cent, were considered to have good body poise; twenty-six, or 36.1 per cent, fair, and nineteen, or 26.3 per cent, poor body poise, while a study of sixty-nine girls with dysmenorrhea showed sixteen, or 23.1 per cent, with good; twenty-one, or 30.4 per cent, with fair, and thirty-two, or 46.3 per cent, with poor body poise. These data are assembled in table 1.

TABLE 1.—*Relation of Posture to Dysmenorrhea*

Body Mechanics or Poise	Good		Fair		Poor	
	No.	%	No.	%	No.	%
Seventy-two girls without dysmenorrhea	27	37.5	26	36.1	19	26.3
Sixty-nine girls with dysmenorrhea.	16	23.1	21	30.4	32	46.3

As dysmenorrhea is one of the common and most troublesome symptoms, it was taken as the criterion for grouping these individuals.

A further study of the group having dysmenorrhea showed that in fifty-eight, or 84 per cent, the pain began before the onset of the flow. This period varied from several days to a few hours, and most often lasted one day or less. In only ten, or 14.5 per cent, did the pain start with the onset of the flow, and in one, or 1.4 per cent, the pain started after the onset of the flow. An additional observation of interest was that 76.8 per cent of this group were relieved of their pain within three hours after the onset of the flow; in 91.3 per cent relief was noted in six hours or less, while in 94.1 per cent the relief was noted within twelve hours or less (table 2).

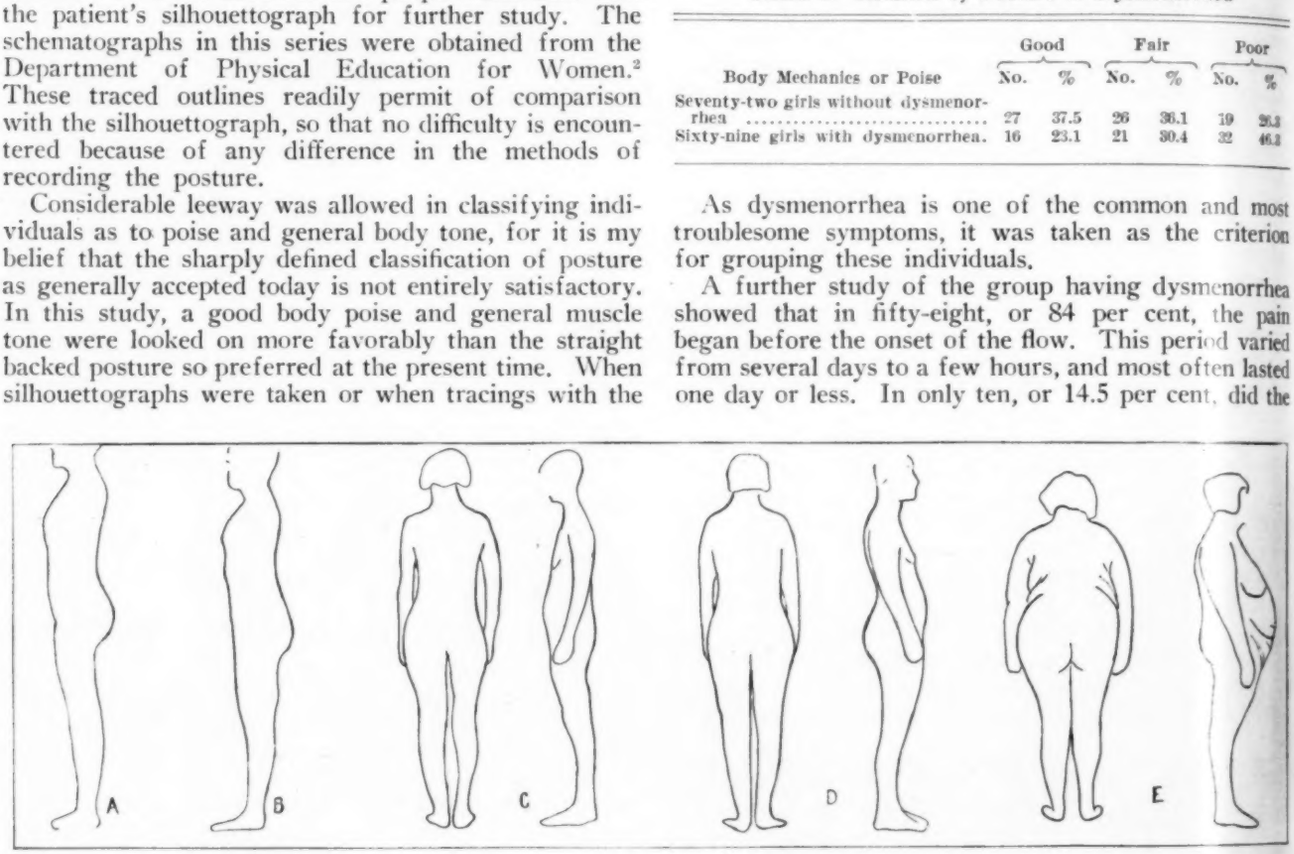

Fig. 3.—Schematographs showing: *A*, excellent body poise; *B*, excellent body poise; *C*, poor body poise; *D*, poor body poise; *E*, very stout person.

TABLE 2.—*Relation of Pain to Onset of Flow*

Pain ceases immediately at onset of flow in	10, or 14.5%	76.8%	91.3%
Pain ceases 1 hour after onset of flow in	15, or 21.7%		
Pain ceases 2 hours after onset of flow in	24, or 34.8%		
Pain ceases 3 hours after onset of flow in	4, or 5.8%		
Pain ceases 4 hours after onset of flow in	8, or 11.6%		
Pain ceases 6 hours after onset of flow in	2, or 2.9%		
Pain ceases 8 hours after onset of flow in	1, or 1.4%		94.1%
Pain ceases 12 hours after onset of flow in	1, or 1.4%		
Pain ceases 3 days after onset of flow in	1, or 1.4%		
Pain continuous during period	3, or 4.3%		

It was also noted that the average duration of the periods in this group was 5.5 days, and further that

2. Through the kindness of Miss Halsey, professor of physical education for women, and Dr. Culler, much valuable data and information have been placed at my disposal.

seventeen, or 24.6 per cent, flowed for more than six days. If a flow of six days or less is considered as normal, then an average of 5.5 days is obviously high, and the seventeen, or 24.6 per cent, flowing more than six days may be considered as having distinctly abnormal periods.

In the same group of girls with dysmenorrhea, it was found that twenty-five, or 36.2 per cent, had some leukorrhea. In most instances this was not a constant symptom but was very noticeable at times and was, therefore, considered abnormal. Many of us have come to consider a certain amount of leukorrheal discharge as normal at the time of the menstrual period. Yet these individuals did not have leukorrhea during their first years of menstruation, the symptom most often having come on later and often being associated with other gynecologic complaints, such as dysmenorrhea or menorrhagia. Regardless of our feeling concerning leukorrhea of this type, it must be admitted that its association with menstruation in apparently healthy virgins indicates a common underlying cause. In twenty of the twenty-five cases, or 80 per cent, the leukorrhea was definitely worse when the individual was tired—a fact which is emphasized because of its bearing on the underlying factor causing these common complaints.

Pain in one or both sides at the time of the menstrual periods was noted in twenty-nine, or 42 per cent. It must be remembered that these girls were all young and presumably healthy virgins, and for that reason pain from inflammatory origin need not be seriously considered. In some instances when pain already existed, it was made definitely worse at the time of the period.

Backache occurred in thirty-two, or 46.3 per cent. This was a constant symptom and was made considerably worse at the time of menstruation in thirty, or 93.7 per cent; and in twenty-three, or 71.8 per cent, it was accentuated when the individual was tired.

The association of these common gynecologic complaints in young, apparently healthy women with faulty body mechanics definitely indicates a common underlying cause, and further shows that this cause is probably circulatory in type, secondary to poor muscle tone or body poise, as indicated by the fatigue, slump or slouch posture so common in women, young and old. Before discussing this further, I shall consider for a moment the data obtained in a study of forty-six nurses, twenty-three with and twenty-three without dysmenorrhea. These data are given in table 3.

Because the number in this group is small, the data obtained can only be considered as suggestive evidence. Among those with dysmenorrhea there were five, or 21.7 per cent, with fairly good poise, and eighteen, or 78.2 per cent, with poor body poise. In the other group of twenty-three without dysmenorrhea, there were seventeen, or 73.9 per cent, with good and only six, or 26.0 per cent, with poor body poise. Comparison of the data shows a slightly larger average for the chest measurements and costal angle in the group without dysmenorrhea, and a smaller average (2 inches) for the abdominal measurements. Data regarding symptoms show a greater difference; thus, 52.1 per cent of those with dysmenorrhea flowed for six days or more, while in the other group only 8.6 per cent flowed longer than normal. The relationship between faulty body mechanics and pelvic symptoms is further emphasized by comparison of the other symptoms of the two groups (table 3).

Analysis of the symptoms and their relationship to poor body mechanics in this study of 187 young women has strongly suggested a definite circulatory basis, secondary to faulty posture or poor body mechanics. The importance of good muscle tone and proper abdominal support in maintaining normal circulation is well known. In order to get a better conception of the part played by circulation, we must recall for a moment some aspects of comparative anatomy and circulation. Physiologists tell us that approximately one fourth of the total quantity of blood is in the peripheral circu-

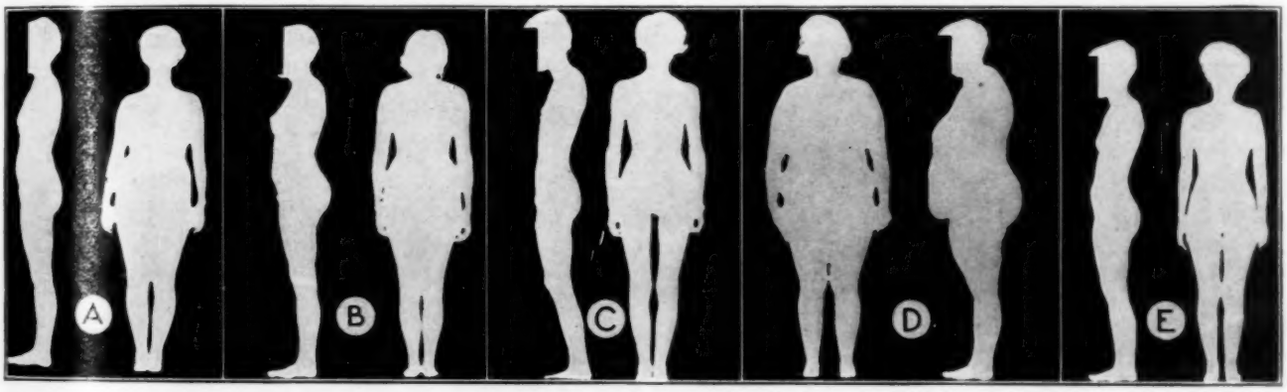

Fig. 4.—Silhouettographs showing: *A*, fairly good body poise; *B*, good body poise; *C*, poor body poise; *D*, poor body poise; *E*, typical slouch posture.

TABLE 3.—*Gynecologic Complaints in Nurses*

	Twenty-Three with Dysmenorrhea		Twenty-Three without Dysmenorrhea	
Average chest depth	6.5 inches		6.6 inches	
Average chest circumference, expanded	31		31.5	
Average chest circumference, normal	29.3		29.7	
Average abdominal circumference at umbilicus	28.1		26.8	
Average abdominal circumference 2 inches below umbilicus	32		30.1	
Average hip circumference	36.7		36.8	
Average costal angle	80.9 degrees		84.2 degrees	
	No.	%	No.	%
Number flowing 6 days or more	12	52.1	2	8.6
Number flowing less than 4 days	4	17.3	10	43.4
Number with metrorrhagia	3	13	2	8.6
Number with pain in sides	16	69.5	3	13
Number with constipation	10	43.4	10	43.4
Number with backache	18	78.2	7	30.4
Number with leukorrhea	14	60.8	7	30.4
Number with good body poise	5	21.7	17	73.9
Number with poor body poise	18	78.2	6	26.0

lation; one fourth in the heart and lungs; one fourth in the liver, and one fourth in the remaining abdominal viscera. If this is so, and we may assume it to be correct for all practical purposes, then in the quadruped most of the blood is above the level of the heart (fig. 6). In man in the upright position, considerably more than one half the volume of blood is found below the level of the heart. The importance of this in explaining gynecologic symptoms is clear when the additional strain it puts on the circulatory system is realized. The work of the heart is necessarily increased and the strain on the vessels, particularly the veins and capillaries of dependent structures, is apparent. Thompson [3] says:

> If the top of the head in the erect position is 2 feet above the level of the heart, and the highest point of the body in the quadruped position is only one-half foot above it, the 1½ feet of difference in a column of blood represents about one twenty-fifth of an atmosphere, or about 30 mm. Hg. This is a considerable addition (20 per cent) to the normal blood pressure in the left ventricle—and the human organism is, as yet, only imperfectly adapted to it; but in addition to this the pressure in the arteries is increased by gravity in proportion to their depth below the level of the heart, a depth which is quite different from many parts in the erect and quadruped positions. . . . The arteries and veins of the portal circulation are, in the quadruped position, at practically the same level as the heart. When the erect position is assumed they become from one-half to 1½ feet below that level and pressure in them is consequently suddenly raised by from 15 to 35 mm. Hg. . . . On account of high capillary pressure there is in man a much greater tendency to edema of dependent parts than in similarly constituted quadrupeds; this tendency applies especially to the portal area where there is double circulation, where the integument is loose, and where there is less capillary support. In a quadruped the abdomen is rather above the level of the heart, owing to the forelimbs being shorter than the hind ones, and the flow in the inferior vena cava is materially toward the heart. . . . The effect on the pelvis is well illustrated in the veins of all dependent parts being more or less chronically congested and frequently becoming varicose, causing capillary congestion and often edema with loss of vitality and other complications in the area around. As a result of the erect posture the whole human pelvis is in a state of chronic congestion almost from birth to death.

With this understanding it is not difficult to see why individuals with poor muscle tone, a flat chest, a narrow costal angle, poor respiration, relaxation of the abdominal wall, and general visceroptosis should have chronic congestion of the pelvic organs. It is also clear why edema and varicose veins are not common in the quadruped. On this basis we can explain many of our present gynecologic difficulties. When a state of chronic congestion exists in individuals with poor body mechanics, we may expect that the superimposing of the physiologic congestion of menstruation on an already congested group of pelvic organs will result in discomfort and untoward symptoms. This discomfort should increase as the congestion increases, and should diminish as the congestion becomes less, or as the organs are depleted. This is exactly what occurred in 84 per cent of the young women with dysmenorrhea (table 2). The pain began one day or less before the onset of the period, and was relieved soon after the establishment of the flow or depletion of the organ.

Menorrhagia or prolonged flow may be explained on the same basis. The fact that this condition often occurs in young women with dysmenorrhea, and in individuals without any apparent pathologic alterations of either the local or the general body systems, strengthens the circulatory explanation.

The infectious causes of leukorrhea need not be prominently considered in this group of young healthy women. The congestion or hyperemia, particularly at the time of the periods, stimulates the cervical glands to secrete beyond their usual quantity and a transient leukorrhea is the result. When the pelvis is chronically congested as a result of poor body mechanics, the leukorrhea becomes a constant symptom. The fact that leukorrhea is worse and more frequent in women when they are tired adds weight to this conception, since the body mechanics is invariably worse in tired or exhausted individuals.

The fact that backache is induced or made distinctly worse in so many women at this time suggests that this may be attributed to the same general cause. It must be noted, however, that numerous other factors may be responsible; thus, so-called sacro-iliac strain, spasm of the back muscles or arthritis must be considered. When these lesions are present, congestion increases the discomfort. Orthopedists often speak concurrently of joint congestion and pain. Certainly, backache is worse in most individuals during menstruation, and, although it may be explained on this basis, congestion of the appendages must not be overlooked as a possible factor. Certainly much of the periodic pain in the sides seems to have its origin in this manner. So much work has been done regarding backache, so many causes have been found,[4] that one hesitates to contribute another explanation until evidence based on more extensive study offers definite proof.

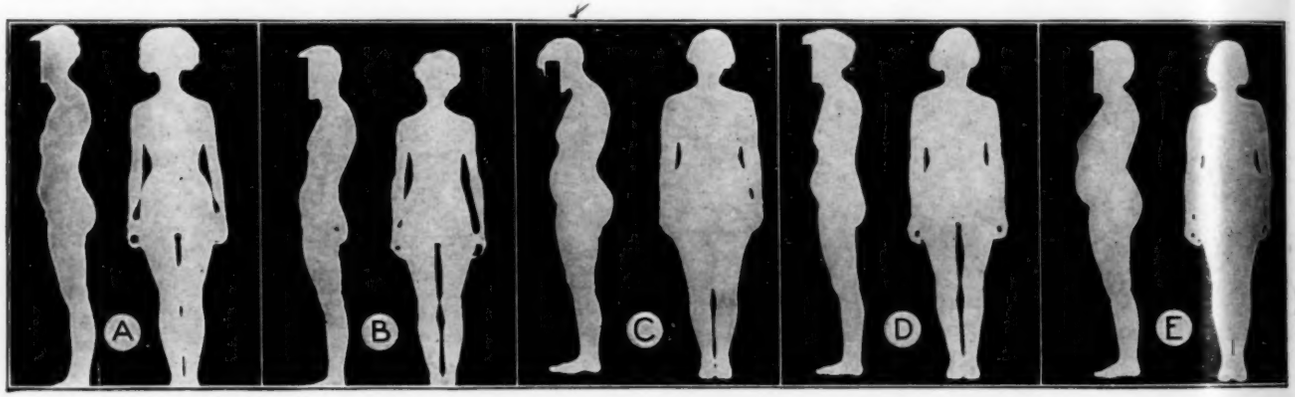

Fig. 5.—Silhouettographs showing: *A*, slouch posture; *B*, *C*, *D*, *E*, typescommonly seen.

3. Thompson, J. K.: The Erect Posture, Lancet **1**: 107 (Jan. 14) 1922.

4. Adams, T. W.: Backache From an Obstetric and Gynecologic Standpoint, to be published.

If our reasoning has been correct, and certain gynecologic symptoms so commonly seen can be accounted for on this basis in young women, then it becomes a much greater factor in the production of symptoms in older married women who often, as a result of childbirth, present worse body poise and muscle tone than are found in the younger individuals. This is more apparent when it is realized that good body mechanics is a rare observation in the ordinary run of gynecologic patients. Among our silhouettographs of patients, the bulk of individuals showed the very poorest type of posture.

It is clear that the circulatory or congestive basis will not account for all cases of dysmenorrhea any more than it will explain all cases of menorrhagia, backache or anything else. The toll of infection must be large; yet in the final analysis may not the congestion

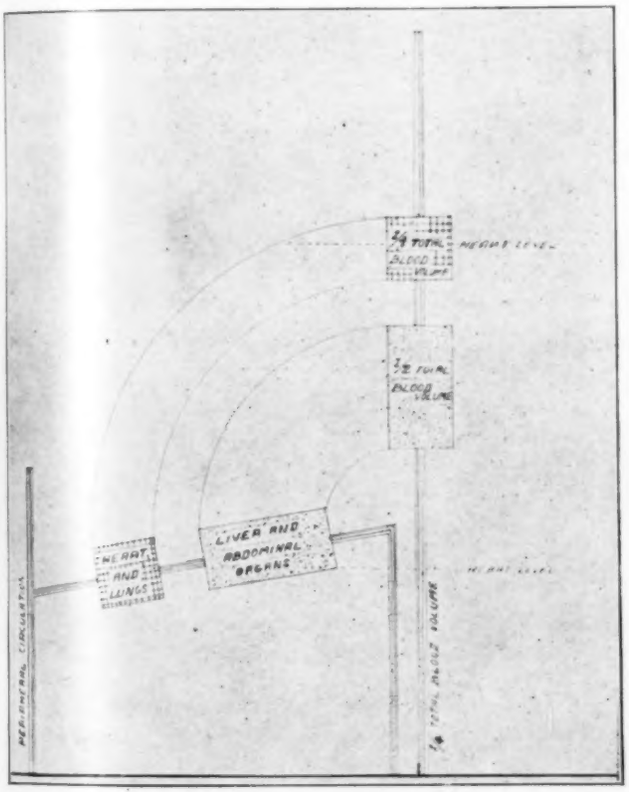

Fig. 6.—Relation of blood volume to heart level in quadruped and in biped.

associated with inflammation be the fundamental cause for pain even though infection is the exciting factor? In older married multiparas, both factors may play a prominent part.

If further study and investigation prove the correctness of the theory that the circulatory factor is responsible in producing these changes, then we shall have a definite basis on which to develop our treatment. Until this is established, relief must remain largely a hit-or-miss proposition.

Treatment by general upbuilding and systematic exercise is indicated. The outlook, however, is not particularly bright, since routine exercises are tedious and laborious at best and are generally carried out in a half-hearted fashion. Continuous and persistent prodding by the physician is necessary, and even that is not always sufficient. To be of greatest value and to accomplish noticeable results, treatment should begin in childhood in the development and improvement of the body and must be carried on throughout life. It is a matter for education and prevention rather than exercise and cure.

ABSTRACT OF DISCUSSION

DR. JOHN O. POLAK, Brooklyn: Dr. Miller's paper is significant in that it shows the correlation in the study of several branches of medicine. The gynecologist has been credited with treating the uterus and with having every symptom emanate from the uterus. I was taught, years ago, by the late Dr. Skene, that the uterus is the smallest part of a woman and that we should study the diseases of the woman first and those of the uterus last. Dr. Miller has brought this out very well. It is in the woman with the faulty pelvic inclination, the woman of ptotic type, that there is the circulatory disturbance which he speaks of. This is not difficult to understand when one recalls that there is only one valve in the entire pelvic circulation—at the junction of the right ovarian vein with the vena cava; when we assumed the upright position, we strained and tested the muscular structure of the pelvic vessels to their utmost. I want to suggest that Dr. Miller consider the question of pain at menstruation as arising from at least two conditions, dysmenorrhea and menorrhalgia, because, as I understand it, he spoke particularly of menorrhalgia, that is, the pain associated with the premenstrual congestion, rather than the actual pain which comes from a lesion in the uterus alone. I was interested in the percentage of backache, recalling what Dr. Leach reported some years ago and the observations of one of my associates some years before that. We all agree on about the same percentage of backache due to gynecologic diseases. Dr. Lynch tells me that his actual percentage is somewhere around 16. Ours, in a thousand cases, was 18. The rest of the backaches are postural backaches. With an understanding of this circulation, and with an understanding of the mechanism and the physiology of menstruation, one can readily see how in the woman of the ptotic type, with defective pelvic inclination, the pelvis can be loaded with blood at each menstruation.

DR. EMIL NOVAK, Baltimore: While Dr. Miller's paper has brought out forcefully the relations between posture and dysmenorrhea, it does not seem clear that this relation is necessarily an etiologic one. The question arises whether both the faulty posture and the menstrual pain are not the results of some more underlying condition. There is no question that in a large number of cases, primary or intrinsic dysmenorrhea occurs in women with anatomically normal pelvic organs. Some of these, though not of course all, are in poor general health, with a lowered threshold for pain stimuli, so that factors which in normal women are perceived as only a mild discomfort may be magnified into actual pain. Not uncommonly one may observe relief from dysmenorrhea, without any local measures whatever, from such general measures as proper diet and hygiene, exercise, correction of anemia, and the general upbuilding of health. Women suffering from such general conditions often exhibit postural defects as well, as Dr. Miller has shown.

DR. NORMAN F. MILLER, Iowa City: In reply to the first question, intrinsic dysmenorrhea probably occurred in about 15 per cent of the persons studied. In more than 84 per cent, the dysmenorrhea was probably not a true dysmenorrhea, but rather a pain or discomfort occurring before the actual onset of the flow, not of the typical crampy type, but more a discomfort or ache. In reply to the second question, I cannot help but feel that probably most of the symptoms mentioned here are secondary to the faulty muscle tone or body mechanics. So many of these individuals have no trouble when they first commence to menstruate, but acquire it with poor muscle tone and general faulty living habits, including overstudy and general neglect of the body, and inactivity. It seems that as the faulty body poise and muscle tone get worse, the symptoms, not necessarily dysmenorrhea but other complaints as well, become accentuated.

CONSTIPATION

RÔLE OF THE NEUROGENIC FACTOR *

RUSSELL S. BOLES, M.D.
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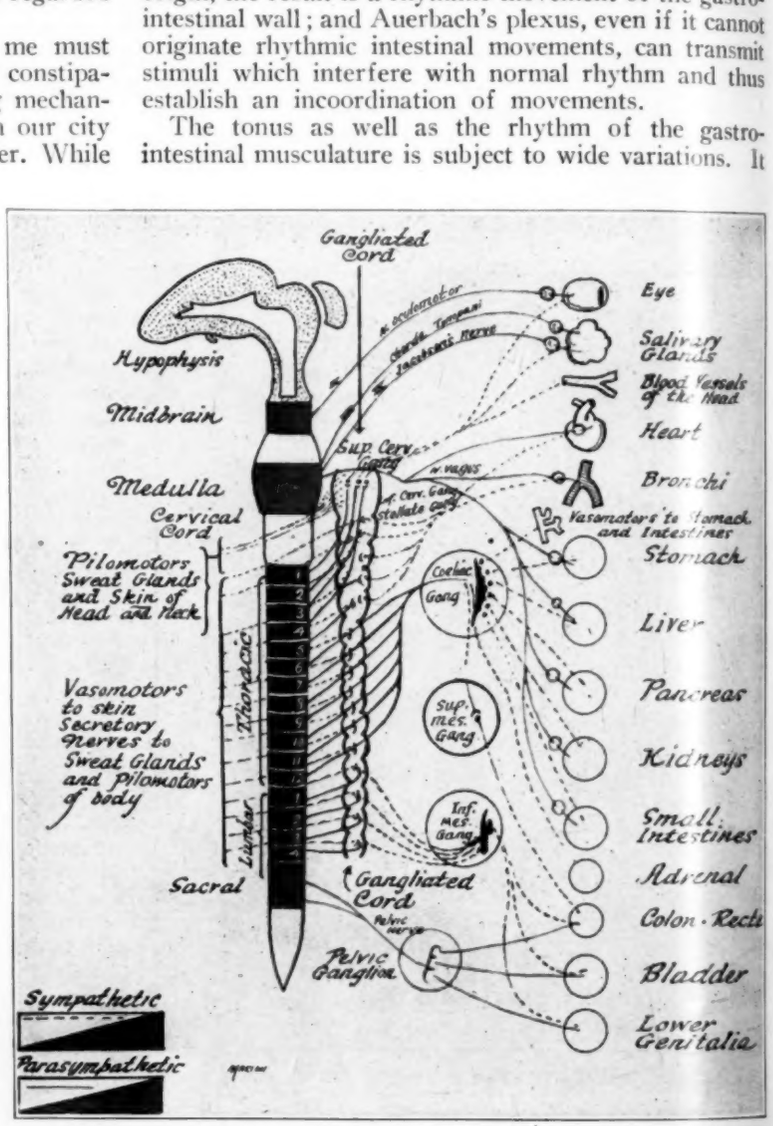
In considering the subject of constipation, I shall digress somewhat from the usual conventional discussion and present it essentially in a light that is regarded more often as incidental than fundamental.

I shall first emphasize what appears to me must eventually become the modern conception of constipation; namely, that the usual type (excluding mechanical and organic types) encountered today, in our city life particularly, is a functional nervous disorder. While an improper diet, consisting of foods too greatly refined and containing too few vitamins, sedentary habits and other current explanations of the condition are important, the fundamental idea always to be borne in mind is that constipation manifests itself only in a soil which has been prepared through the agency of an unstable nervous system. This may be congenital, or acquired through the unceasing combat with the demands of modern civilization.

In explanation of this contention, the following facts may be submitted. It is generally accepted that the activities of the gastro-intestinal tract are largely autonomous—that it can function, especially as regards peristalsis, without aid from the extrinsic nerves. Frequently, however, it does not function in a normal manner because of the part played by the extrinsic nerves, which can either stimulate or depress the whole or a part of the gastro-intestinal tract, or can stimulate one part while depressing another. The innervation of the gastro-intestinal tract, as is well known, depends, on the one hand, on the sympathetic nervous supply and, on the other hand, on the nervous supply from the parasympathetic or vagosacral nervous system. These two divisions of the vegetative nervous system are antagonistic in their function. In health they are in a state of equilibrium which is expressed in normal function of tonus, peristalsis, secretion, and sphincter control. Stimulation of the parasympathetic system increases motor and secretory activity and results in unequal contractions and disturbed rhythm of the gastro-intestinal musculature. If the circular fibers are mainly affected, there is stasis with spasticity; if the longitudinal fibers are affected, hyperperistalsis ensues, causing diarrhea. Stimulation of the sympathetic system proper inhibits motor and secretory activity and increases sphincter control. To the varying stimulation of this duplex innervation, extending from the esophagus to the termination of the colon, the gastro-intestinal tract reacts just as do other viscera, for example, the heart and blood vessels.

Whether the normal rhythmic contractions of the bowel are purely myogenic or are neurogenic in origin is a debatable question. Some twenty years ago Magnus contended that the rhythmic contractions of the bowel resulted from stimuli coming from the ganglion cells in Auerbach's plexus, and consequently were neurogenic. Alvarez [1] and others have held that such contractions are due to the inherent rhythmicity of smooth muscle, while the nerves play a secondary part, and consequently peristalsis is myogenic. Whatever the origin, the result is a rhythmic movement of the gastro-intestinal wall; and Auerbach's plexus, even if it cannot originate rhythmic intestinal movements, can transmit stimuli which interfere with normal rhythm and thus establish an incoordination of movements.

The tonus as well as the rhythm of the gastro-intestinal musculature is subject to wide variations. It is raised (1) as a result of distention of the tract by its contents, and (2) by pleasurable psychic stimuli, which, as is well known, excite intestinal reflexes. This explains the fact that certain persons are impelled to go to stool after simply smelling or thinking pleasurably of food, and that the defecation reflex is initiated at the mere contemplation of the pleasure gained from a natural bowel movement, or from the inspection of a new house or the planning of a dinner party. Increased tonus, giving rise to spasticity of the colon, is probably brought about by unusual irritability of the neurons supplying the intestinal musculature, as a result of disease states in the tract itself or of direct irritation by



Schematic illustration of the distribution of the two components of the vegetative nervous system, showing its division into sympathetic and parasympathetic and their branches to the various organs (Pottenger).

* Read before the Northumberland Medical Society, April 14, 1927, and at the Gastro-Enterological Seminar of the Philadelphia County Medical Society, April 29, 1927.

1. Alvarez, W. C.: The Mechanics of the Digestive Tract, New York, Paul C. Hoeber, 1922.

toxins within the tract. Furthermore, according to Pottenger,[2] afferent sensory impulses, arising without the tract, may reflexly increase tonus. Such reflexes may result from eyestrain, chronic appendicitis, gallbladder disease, and inflammation of the stomach, liver or pancreas, since the afferent sensory stimuli of all these organs are in reflex connection with the motor neurons of the intestinal parasympathetics. The motor activity thus stimulated produces unequal muscular contractions and disturbed rhythm, which in time cause constipation. Depression of tone and muscular activity may be brought about by conditions which stimulate the sympathetics, such as emotional states (worry, fear, nerve depression), some neuroses, pain and certain toxemias. If the stimulation, whatever its cause, is sufficiently powerful, acute toxemia or biliousness may occur, with anorexia, nausea, vomiting, malaise, headache, etc., and eventually a state of chronic toxemia is produced, the effect of which may be manifested through the sympathetic or the parasympathetic system, depending on which one is subjected to the greater stimulation. Rational treatment of constipation, therefore, depends on whether one is dealing with a condition of spasticity or of atonicity. For this reason each case of constipation must be individualized; that is, the individual himself, as well as his disease, must be properly appraised.

An explanation of the gastrocolic or feeding reflex, or "postprandial urge," which originated the habit of a daily after-breakfast bowel movement, is afforded by certain facts. Physiology teaches that smooth muscle varies greatly in tone—that it reacts powerfully and quickly after a long rest. Furthermore, Keith has demonstrated that "nodal points," as he terms them, are situated at the pylorus, duodenojejunal junction, ileocecal junction, and pelvirectal junction. The nodal pacemaker is situated on the lesser curvature of the stomach near the cardia. Applying these facts, we see that intestinal muscle, after resting during the night, is awakened to activity in the morning by the exercise incident to bathing and dressing. The eating of breakfast initiates the reflex, which is relayed through the nodal points to the colon and rectum, and the result is the act of defecation.

The frequency, regularity and proper performance of this act indicate whether or not constipation exists. There are enthusiasts who maintain that at least three complete movements a day are nature's program, and again there are conservatives who believe that a movement every two or three days is sufficient, while the majority of human beings seem to think that one daily movement meets the demands of hygiene and decency. My observations have convinced me that here again the matter depends on the individual. He or she of the quiet, steady, phlegmatic make-up may appear to get along quite well on one bowel movement a week; he or she of the emotional, high tension, hair-trigger type requires at least one evacuation a day. It is the latter type with the spastic colon that makes up the bulk of the constipated populace. These are the truly constipated. The so-called atonic type of constipation may be attributed to a lazy colon. It is typified by "dyschezia," the term applied by Arthur Hurst to rectal constipation.

The atonic type of constipation is due to habitual disregard of the call to defecate, to weakness of the voluntary muscles concerned, to anal sphincter spasm, or to unphysiologic posture for defecation. Incidentally, it is interesting to note that the children of China, India and Japan rarely have constipation. This is because in infancy the mother holds the child in a squatting position to defecate, with the thighs flexed on the abdomen. The adults continue this posture with advantage by not sitting on a toilet but by squatting over a hole. Constipation of the atonic type may usually be seen in elderly persons who have weak voluntary muscles and deficient peristalsis, and in those suffering from anemia, obesity and acute infections. It may also be due to too little food, or to food poor in residue or devoid of the essential mechanical and chemical excitants, as exemplified by white bread, white sugar, canning and excessive cooking. Insufficient exercise may also be responsible, though letter carriers are said to be a constipated lot. The diagnosis of atonic constipation is not difficult and its correction is simple.

DIAGNOSIS

In making a diagnosis as to the type of constipation, the first essential is to know the patient; one may then suspect the type of constipation. She of the spastic type (less often he, unless the patient is a Jew or a physician) has the nervous temperament, is usually visceroptotic, perhaps emaciated. Having studied the general make-up of the patient, one next observes the character of the stools—ribbon-like, pencil-shaped, small pieces, accompanied perhaps by mucus. The roentgen-ray appearance of the colon—spastic, segmented, with deep haustrations—will aid in making up a well defined clinical picture. These patients are usually, though not always, neurotic; the more they become conscious of their abdomen, the more neurotic they become. It is therefore imperative that their minds be distracted from their bellies; above all, they should not be permitted to scrutinize their stools, for they soon center their attention on their mucus and will dilate at length on it. The best advice for them is that given long ago by Goodhart: "Do as the dogs do, and don't look behind you."

A practical method of estimating intestinal motility is the carmine test. Two five grain capsules of powdered carmine are given after breakfast. The patient is instructed to note the first and last appearance of the red discoloration. Normally the carmine should all be eliminated in from twenty-four to thirty-six hours. The roentgen rays, however, furnish the most accurate means of diagnosis, since they reveal not only the presence of stasis but in what part of the tract it occurs. Normally the opaque meal should pass from the colon in approximately twenty-four hours.

The diagnosis must of course determine whether the constipation is purely a functional affair or whether it is the result of some organic disease within or outside the intestinal tract. Benign or malignant strictures of the colon, diverticula, visceroptosis, kinks, adhesions, membranes, endocrine deficiencies, all must be considered. Narrowing of the lumen of the bowel from outside pressure, as from a retroverted uterus, or from tumors of the female generative organs, of the liver, kidney, or gallbladder with associated adhesions, or from intussusception, redundant pelvic colon (and these are stubborn cases), or from adhesions at the flexures may constitute a mechanical cause for constipation.

As the spastic type of constipation is the variety most frequently encountered, I shall discuss it somewhat more in detail. This condition was formerly thought to be uncommon. Some years ago Hurst thought it occurred only infrequently in England, and the same opinion was held in Germany, especially by Boas. Per-

2. Pottenger, F. M.: Symptoms of Visceral Disease, ed. 2, St. Louis, C. V. Mosby Company, p. 158.

haps Boas was right; the Germans are too phlegmatic to be thus affected. It is my belief that the increasing frequency—in this country at any rate—of spastic constipation is due primarily to the increasing development of a type of individual who is fundamentally and congenitally susceptible. The sufferers from this condition either inherit an unstable nervous mechanism (usually from the mother) or they acquire it when they reach adult life and are forced to enlist in the bitter struggle which a modern existence demands. They develop, among other ailments, migraine, certain neuroses, and a spastic colon. Their constipation is an effect, not a cause; it is a symptom, not a disease, and as such it must be intelligently studied and treated.

These patients usually complain of ill defined scattered areas of tenderness in the abdomen, frequently along the course of the colon. The cecum is invariably dilated, tender and ptosed; it may be fixed by adhesions or too freely movable (the cecum mobile). The sigmoid is easily palpable, cordlike, and tender. Usually the greater the spasticity of the distal end of the colon, the greater is the dilatation of the proximal end, especially of the cecum and ascending colon. The spasticity usually begins just short of the splenic flexure. Incompetence of the ileocecal valve is frequently observed, and may or may not be of significance. Spasm of the sphincter is usually present, and associated with this condition may be found hemorrhoids, fissures, enlarged papillae, infected crypts, and the like. The individual with spastic constipation is too frequently the victim of appendectomy or cholecystectomy, with the result that his latter condition is worse than the first, since the psychic shock alone aggravates his troubles. When, as frequently occurs, there is an associated chronic appendicitis or gallbladder disease, the advisability of surgical operation is often a troublesome question. In the type of patient under consideration, the diagnosis of chronic appendicitis may well be discarded and operation for it abandoned. I am convinced that chronic appendicitis rarely becomes a clinical entity, occurring by itself and producing symptoms only of itself.

SYMPTOMS

The symptoms of constipation and intestinal stasis may be grouped under that greatly overworked and often abused term, intestinal toxemia. Whether they are the result of the constipation or simply associated with it must be determined from a study of the case. In my experience these symptoms in the order of their frequency are lack of endurance, disinclination for work or play, headache, irritability, vertigo, anorexia, flatulence, nausea, mental and physical depression, anxiety or fearfulness, and insomnia. Objectively, one may find a coated tongue, fetid breath, sallow complexion with pigmentation beneath the eyes and in the armpits, anemia, malnutrition, poor circulation as shown by cold hands and feet and low blood pressure, brittle hair and nails, and other cutaneous conditions, such as acne, eczema rubrum and seborrheic eczema, erythema multiforme, purpura, lichen planus, and urticaria. Among the neurologic conditions frequently associated with constipation are neurasthenia, neuroses of various sorts, neuritis, neuralgias, loss of memory and lack of concentration. Various mental conditions, such as melancholia, psychoses of various types, and petit mal, have been attributed to constipation. Whether there is a direct relation of cause and effect in these cases remains to be proved. The relief of neuromental symptoms, however, has been so marked in many reported cases treated by a dietetic regimen that the association between the toxemia and the functional psychoneurosis seems undeniable. Visual disturbances, such as blurring, muscae volitantes, amaurosis, conjunctival congestion, iritis and lens changes are not uncommon. Other conditions frequently associated with constipation are asthma, arthritis, cholecystitis, peptic ulcer, appendicitis, changes in the gastric secretion, and colitis. At times, anatomic abnormalities may be present. The work of Larimore [3] has shown that there may be great variation in the length of the colon. He has also shown that distal redundance, which usually involves the sigmoid, is accompanied with a high incidence of impaired motility. Bryant, White, and recently Kantor [4] have demonstrated the great variation that occurs in the length of different parts of the gastro-intestinal tract. Draper asserts that these defects are hereditary and conform to the mendelian law.

Exactly which, if any, of the numerous conditions mentioned is actually related as cause or effect to constipation, I am not prepared to say. Though scientific proof is lacking, the fact remains that correction of the constipation is followed by relief of the associated complaints, thus making it appear that there is a causal relationship. The fact must not be overlooked, however, that constipation is very often associated with pathologic conditions with which it has nothing whatever to do.

Assuming that some of the objective conditions are the direct sequel of constipation, it may justifiably be asked why certain individuals will react to it in such varied ways, while others remain unaffected. As has already been intimated, the manner in which an individual reacts to constipation depends to a great extent on his fundamental make-up. If a person is solidly constructed, nervously and mentally, or occupies a position in life which calls for physical rather than mental activity, or enjoys an environment of peace and calm, the reaction may be of short duration, usually manifesting itself simply as an attack of so-called biliousness. Such individuals are not sensitive to the many complicated reflexes that bring on distressing and lasting ill effects; if the condition is one of true toxemia, it may be that they possess a stronger immunity to intestinal toxins than others. In any event, their nervous threshold is high and their defense proportionately strong. Nature ordinarily endows us with a strong protective mechanism in which the nervous system is the first line of defense. Behind this comes the protection afforded by an intact intestinal mucosa which prevents the absorption of toxic agents. Next come the organs of detoxication, the liver, the kidneys and the thyroid gland, which reinforce the liver. Dependent, then, on the integrity of the various lines of defense is the health and comfort of the constipated individual.

To the modern idea, promulgated by Alvarez and others, that the symptoms from constipation are entirely due to reflexes engendered by distention of the bowel with retained feces, and that there is no real toxemia, I cannot subscribe. I believe that a true toxemia does exist. Much evidence favors this view, while little discredits it. First, patients with dyschezia suffer least from their constipation, while those with loose bowels suffer the most. The syndrome of acute constipation and its attending transient disturbances, which are often relieved by taking a laxative, is a far different proposi-

3. Larimore, J. W.: The Human Large Intestine in the New-Born and in the Adult, Ann. Clin. Med. **5**: 439 (Nov.) 1926.
4. Kantor, J. L.: The Redundant Colon, Am. J. Roentgenol. **12**: 414-430 (Nov.) 1924.

tion from that encountered in chronic spastic constipation with its galaxy of symptoms. Laxatives do not relieve this type of constipation where the colon is contracted rather than distended. In this class of patients there appears to be a true toxemia. The fact that there is no scientific laboratory proof that such is the case is no valid reason for denying its possibility. Unfortunately, some individuals have waxed too eloquent and too enthusiastic on the subject of toxemia, and because of this its possibility is often discredited.

Bouchard, Metchnikoff and Herter were among the first to make an intelligent study of intestinal toxemia, and the work of Herter, some twenty years ago, still serves as a solid basis for the continued investigation of the bacteriologic and chemical processes going on in the intestine. Herter described three types of intestinal toxemia: the indolic type showing a preponderance of *B. coli, B. proteus* and *B. mesentericus;* the saccharobutyric type associated with a predominance of anaerobic bacteria, especially of *B. welchii* (*aerogenes-capsulatus*), *B. bifidus* and *B. putrificus,* and a mixed type or combination of these two. In my own experience I find that the indolic putrefactive or proteolytic type of toxemia occurs in the majority of cases. The bacteria associated with this type of constipation are the result of a predominantly animal protein diet, and they replace the normal aciduric micro-organisms in the bowel. When the diet is predominantly carbohydrate, the saccharobutyric or fermentative type of toxemia is apt to develop.

At this point a few words concerning anemia may not be amiss. In a group of patients with pernicious anemia, Moensch, Kahn and Torrey have found unusual numbers of gas bacilli in nearly all the cases. Herter describes a series of experiments in which the majority of a group of animals infected with *B. welchii* developed a blood picture characteristic of pernicious anemia. Evidently as far as pernicious anemia is concerned experimental work is gradually closing the net on some organism or toxin arising in the bowel as the exciting etiologic agent. In my experience secondary anemia is almost invariably found in association with intestinal stasis and toxemia. This evidence has led me to think that, as there are definitely hemolytic organisms or toxins found in the bowel, it may be possible that other organisms or their toxins from this locality may have affinities for various tissues, in one case the blood being attacked, in another the joints, in still another the skin, and so on.

The experimental work of Power and Sherwin [5] on intestinal toxemia is most interesting and suggestive. They isolated the principal non-nitrogenous putrefactive products resulting from the action of bacteria on the intestinal proteins and also the principal nitrogenous products. These products, in 1 Gm. amounts, were fed to a series of subjects during a period of twenty-four hours. They found that the ingestion of more than 50 Gm. of skatole or indole (end-products of the nitrogenous group) produced the typical symptoms encountered in constipation. They concluded that the body is equipped with a chemical defense mechanism nonspecific in character, and that the defense is afforded, as has been shown by others, by the detoxicating functions of the liver, kidneys and thyroid gland. Koessler and Hanke, in their recent work on histamine, have shown that the intestinal wall must now be considered as the site of a detoxicating mechanism. Thus, though space permits me to cite only a few examples, much clinical and experimental work is in progress which will doubtless rescue the subject of intestinal toxemia from the whims of the faddist and entitle it to proper respect.

5. Power, F. W., and Sherwin, C. P.: The Detoxication of Putrefactive Products by the Human Body, Arch. Int. Med. **39**: 60 (Jan.) 1927.

TREATMENT

In considering the management of constipation, the fact cannot be too strongly emphasized that treatment can never be routine any more than the treatment of jaundice can be routine. Individualization is imperative. The management of constipation must begin with its prevention, and this must start in infancy. Infants should be held in a squatting position with the thighs flexed on the abdomen. Children should not be compelled to sit with dangling feet on high toilets; a stool should be placed under their feet. This simple procedure is also helpful to adults with weak abdominal muscles. The establishment of a regular time for defecation (after each meal, or at least after breakfast) and strict adherence to the schedule are essential. The act should never be hurried, and the mind should not be unduly concentrated on it.

As regards diet, the food must be sufficient in quantity, and must be ingested at regular hours. The teeth should be in good condition in order to masticate it properly, but it should not be fletcherized. The character of the diet must always be modified to suit the individual; what is good for the lean is not good for the obese; what benefits the atonic type may harm the spastic type. The presence of an associated disease, such as diabetes or ulcer, obviously calls for a modification in the character, variety and preparation of food. Generally speaking, a proper selection of food should be made from all the fruits and green (above ground) vegetables, since these are rich in cellulose and contain the necessary salts, vitamins and organic acids. In spastic constipation many of these foods are not permitted because of their high cellulose content. For the same reason bran may be harmful. For such patients the underground vegetables and starchy foods, such as potatoes, rice, macaroni, strained cereals, and white bread instead of whole wheat bread, with the avoidance of skins, seeds, etc., are desirable, but for a short time only. Later, stewed fruits and well cooked green vegetables may be allowed. While a certain amount of meat is advisable, it should always be taken in moderation. Although the vegetable proteins are perhaps not so quickly assimilated as those of animal origin, they nevertheless meet the requirements for good health, as shown by Chittenden of Yale, McCollum of Johns Hopkins, and others.

A sufficient amount of water is always required—hot water, especially on rising, for the spastic patient, cold for the atonic. Various hydrotherapeutic measures, such as hot baths and hot applications, preferably in the form of abdominal packs, aid in relieving spasm. For emaciated and visceroptotic patients a well fitted abdominal pad is helpful. In all cases a moderate amount of exercise, particularly of the abdominal muscles, is required. In addition to active exercise, abdominal massage and electricity are indicated. In the spastic type light massage and the galvanic current are helpful, while in atonic cases vigorous massage and an interrupted sinusoidal current may be employed. Deep breathing exercises are always beneficial.

Enemas are useful in cases of rectal constipation (dyschezia). Transduodenal lavage and colonic irriga-

tions, when properly administered, are temporarily advantageous especially when there is an intensive toxemia. In the spastic types the temperature of the solution should be about 100 to 104 F., in atonic cases about 90 F.

With reference to changing the intestinal flora by the implantation of bacilli of the Bulgarian or acidophilic type, the latter organism can unquestionably be implanted and caused to predominate in the intestinal tract, provided proteins are withheld from the diet. The acidophilus organism may be administered in acidified beef broth, whey, or whole milk cultures. It is rapidly destroyed, however, in the tract, and a rigid adherence to the diet with adequate consumption of lactose or lactose-dextrine must be continued for some months before any appreciable benefit may be expected.

Drugs are rarely indicated, except in cases of acute illness or when the constipation is the result of such conditions as senility, anemia, cancer, diabetes, kidney disease or insanity. It is inadvisable to prescribe cathartics as a routine; if they must be used, they should be selected with extreme nicety to fit the individual case. Cascara is suitable for aged men and pregnant women. Salines are not appropriate for dyschezia. Liquid petrolatum, agar-agar and psyllium seeds will not harm any one, and are often distinctly beneficial. Toxin-absorbing agents as kaolin, and the various toxin-preventive substances, such as lactose and lactose-dextrin are decidedly worthy of trial. In spastic cases sedatives (bromides, atropine, belladonna, hydrastis, etc.) are distinctly helpful. In atonic cases and in those with nervous depression, strychnine, which is supposed to stimulate Auerbach's plexus, and other tonics are indicated. Thyroid and ovarian substances are helpful in suitable cases. With pituitary substance and other hormones I have had no experience.

Psychotherapy has served as a most important means of approach in correcting nonorganic constipation. Patients falling in this group must be convinced that the world does not revolve around their colon, and that missing a movement for one, two or three days does not spell slow but sure dissolution. They must be assured that their health is something more stable than a house of cards—that it will not collapse under the weight of an extra day's accumulation of feces. By employing all the available methods of examination, such as the history, physical examination, roentgenographic and sigmoidoscopic examinations, and always a digital exploration of the rectum, one should assure them, as well as oneself, that no organic obstruction or disease exists. They should be taught to relieve the tension under which they are living, to cultivate the art of relaxation. Periods of complete mental and physical rest during the day are imperative, and also the avoidance of late hours. Repose and buoyancy must supplant fear, anxiety and depression. In achieving this, the old Goodhart formula that "the bowels were made for man, not man for his bowels," may well be prescribed.

Final emphasis may be given the fact that the great need of these patients is psychic culture as well as physical culture. A strict individualization is essential in each case, if a proper estimate of the significance of the patient's constipation is to be made, and if an intelligent program of treatment is to be carried out. To this end I would commend the words of Pottenger when he bids us remember that "there is a patient who has the disease as well as a disease that has the patient."

1901 Walnut Street.

STUDIES ON THE EFFECTS OF ABUNDANT CEREAL INTAKE

I. THE USE OF CEREALS AS THE CHIEF SOURCE OF CALORIES *

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According to official statistics, the most important groups of food commodities consumed by the American people are grains, meats and dairy products. Pearl[1] has shown by calculations based on government figures for the years 1911-1918 that grains and grain products lead all other classes of foods in furnishing approximately 36 per cent of the protein eaten and about 35 per cent of the calories consumed, whereas meat products stand first as a source of fat and second as a contributor of protein and calories.

When the relative costs of different types of food are considered, one finds, as Sherman[2] has pointed out, that grain products cost only approximately 18 per cent of the total food bill in the average American dietary, as compared with 32 per cent for the meat item and 20 per cent for dairy products. It is clear, therefore, that in America at least, the cereal products possess a real economic advantage.

During the war, through the propaganda efforts of the Food Administration, the American people succeeded in effecting a real mass change in the consumption of the several classes of food commodities, as evidenced by Pearl's calculations for the years of the war. The war conditions motivating these changes no longer exist. Nevertheless the wisdom and desirability of such changes as objectives for students of nutrition and food economics remain as questions worthy of consideration. If the cereal grains and their products possess definite economic advantages, to what extent can these be realized in the light of the accumulating facts in the science of nutrition? For example, to what extent and under what conditions is a program for a much more liberal use of cereals justified? What are the limits of physiologically advantageous cereal intake? Do they vary with different products and under different conditions of activity and environment?

Rose,[3] in discussing "what is progress in nutrition?" pointed out the importance of still considering such an important and long recognized factor in nutrition as total calories. She writes:

> Some would seem to rest content with the idea that all the problems of nutrition can be solved by the simple formula, "eat more milk and vegetables." Of course no one will deny the importance of increasing both of these in the American dietary, but it is not safe to assume that an ideal diet will result. Study of the dietaries of several groups of children, all having an excellent supply of milk, and none being very low in vegetables, has shown that the commonest dietary defect is shortage of total calories, sometimes through too low a supply of fat and sometimes through a very limited intake of cereal foods.

* From the Yale University Laboratory of Physiological Chemistry.

1. Pearl, Raymond: Studies in Human Biology, Baltimore, Williams and Wilkins Company, 1924.
2. Sherman, H. C.: Food Products, revised edition, 1924, chapter XIII.
3. Rose, M. S.: J. Home Economics, **17**: 372, 1925.

In considering the rôle that cereals may play in the diet, one must bear in mind the facts that, whereas the cereals are easily digestible and readily available, they are admittedly not "perfect" or "complete" foods. Such being the case, one may dismiss from consideration the question of feeding the cereals unsupplemented by other foods. However, the cereals may certainly be employed as sources of food fuel. To what extent may they be so used? Are there any physiologic limits to such a use of cereals? The research reported in this paper was planned with the view of ascertaining to what extent various whole grain cereals and commercial cereal products may be increased as sources of energy in the diet. Extreme rather than optimal conditions of dietary inclusions of cereal were studied.

PLAN OF EXPERIMENTS

In formulating the conditions for experiments to determine to what extent cereals as such can enter without detriment into the diet, a plan, different from that more commonly followed, was devised. A mixture of food materials believed to contain all the essentials of the diet but inadequate in its energy yield was supplemented with various liberal or very large amounts of the cereal products, on the one hand, and, on the other hand, dextrin, a purified carbohydrate substance carrying none of the supplementary inclusions of the ordinary cereals.

TABLE 1.—*Composition of Diets in Which Cereals Furnished Large Fractions of the Total Calories*

	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
Meat residue	23	18	12	5.5	...
Liver, cooked dried	5	5	5	5	3.0
Salt mixture [6]	4	4	4	4	3.0
Cod liver oil	2	2	2	2	1.5
Lard	5	..	..	...	...
Dextrinized starch, Oatmeal, cooked dried, Whole wheat, Pettijohn, cooked dried, Corn meal, yellow cooked died	each 63	71	77	83.5	92.5
Total	100	100	100	100	100
Calories furnished by cereal—approximate percentage	62	72	78	84	93

As the American people secure approximately 35 per cent of their calories from cereals,[1] whereas the average Chinese diet provides from 66 to 72 per cent of its energy in the form of cereal,[4] it was decided to determine the effects of rations planned as indicated and to increase the inclusion of cereals as sources of energy to beyond these proportions. The rations used are shown in table 1. In the course of the study the dietary inclusions of cereals were increased to as much as 93 per cent of the calory yield.

RATIONS USED

Recent studies of Osborne and Mendel [5] indicate that additions of liver and lettuce to the commonly employed "complete" experimental diets afford unusually rapid growth in the white rat. Therefore, in planning the "perfect" part of the ration intended to supplement the cereals in the diet, the following materials were selected: commercial meat residue as a supplementary source of good protein, dried cooked liver, Osborne and Mendel's [6] salt mixture, and cod liver oil, together with 15 Gm. of fresh lettuce fed separately each day. The exact amounts of these substances used are indicated in table 1. Analyses of all energy-yielding materials for nitrogen, moisture and ash were made, and the results considered in estimating the calorific values of the diets and that part of the energy being contributed by the cereal component.

All food materials were purchased from a local grocery. The cereals used at the very beginning of the experiments were whole-grain products, such as rolled oats (Quaker Oats), whole wheat (Pettijohn), and yellow corn meal. The remarkable success attending the use of all the diets with these cereal products during the first two weeks suggested the advisability of testing representative more highly milled cereal products. A milled wheat breakfast food product and hominy were selected and used in rations planned as those in which the cereal was intended to furnish from 82 to 84 per cent of the total calories.

All cereals were cooked in water from twenty to forty minutes. The cooked material was then spread out in thin layers on suitable trays and dried in a current of air at approximately 70 C. This drying treatment required at least six hours. In most cases it lasted from ten to twelve hours. The dried material was then ground in a mill and the pulverized product stored in air-tight containers. Analyses for nitrogen, ash and moisture were performed on this final product. In our opinion these cereals were thus subjected to a much more severe culinary treatment than is ordinarily accorded them by the housewife.

In order that the cereals, which contain such relatively large amounts of carbohydrate, may furnish such large fractions of the total calories as the plan of the experiments demands, it is impossible to include much fat. Consequently it was not feasible to feed the food materials in the form of a permanent paste. The rations were therefore prepared in the form of a powder and care was taken to insure as fine a subdivision of each component as possible and as even a distribution of it throughout the mixture as could be obtained. This procedure made it impossible for the animals to pick out and ingest certain of the materials and to reject others.

Attempts were made to measure the amounts of food consumed by the animals. With some rats, trustworthy food intake records were secured. In many cases, however, the animal scattered such large amounts that the practice of weighing the food was discontinued.

ANIMALS

The experiments were begun with young albino rats weighing from 35 to 45 Gm. For the growth experiments each animal was caged separately in accordance with the technic employed in this laboratory and described in detail elsewhere.[7] The wire bottoms and pans on which the animal and cage rested were changed and sterilized with live steam twice a week. The rest of the cage was similarly treated once a week.

The cages were kept in a well lighted room so placed, however, that direct exposure of the animals to sunlight was not possible. A physiologic substitute for sunlight, namely, cod liver oil, was relied on to meet the needs of the animals for vitamin D.

With most diets at least seven animals were used, for the following reasons: two males to be killed in an examination for rickets; a third male to be used for

4. Adolph, W. H.: J. Home Economics **17**: 1, 1925. Wu, H.: Chinese Soc. & Polit. Sc. Rev. **11**: 56, 1927.
5. Osborne, T. B., and Mendel, L. B.: J. Biol. Chem. **69**: 661 (Aug.) 1926.
6. Osborne, T. B., and Mendel, L. B.: J. Biol. Chem. **32**: 317 (Dec.) 1917.
7. Smith, A. H.; Cowgill, G. R., and Croll, H. M.: J. Biol. Chem. **66**: 15 (Nov.) 1925.

breeding experiments, if the diet should prove satisfactory for growth; a fourth male to be used in an examination for anything novel or unexpected that might develop and general confirmation of results obtained with other animals of the group; and three females to be used for reproduction and lactation studies if the diet proved satisfactory for growth. In the case of the dextrin diets, only three males were used, largely because most of the dextrin rations so rich in the purified carbohydrate were deemed very likely to prove unsatisfactory for growth—a result that, quite unexpectedly, was obtained with only one such diet; namely, that in which dextrin furnished about 93 per cent of the total calories. This result in itself gives cogent evidence that the rest of the diet—the so-called "perfect" component—had been advantageously selected.

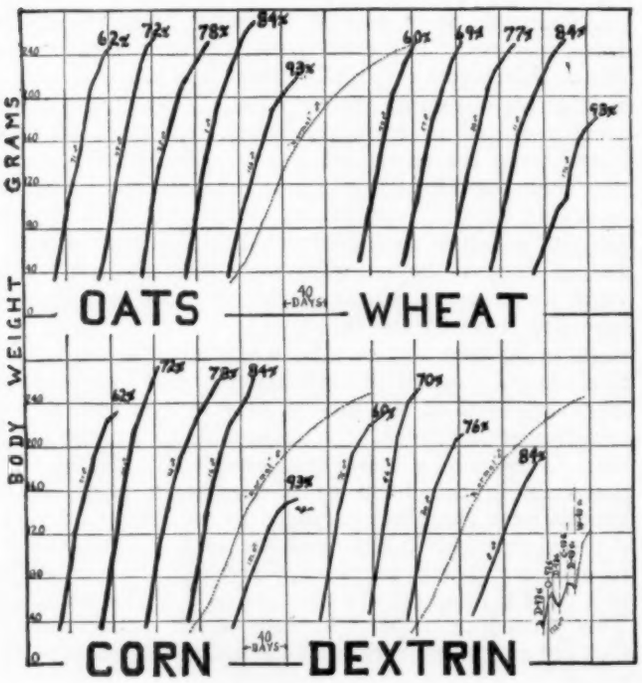

Chart 1.—Calories from cereals.

RESULTS

Growth.—The growth exhibited by all the animals in a given series was so nearly the same that it seems unnecessary to present curves for every rat. Therefore only results obtained with representative animals from each series are shown in chart 1.

Diets in which cooked whole-grain cereals furnished approximately 62, 72, 78 and 84 per cent, respectively, of the total calories proved to be excellent for purposes of growth. Animals on these rations maintained the growth rate without appreciable change throughout the period of the experiment, the body weights of the males at the time they were killed being about 240 Gm. The rates of gain of body weight in these animals have rarely been attained in observations on the growth of rats heretofore published.

The noncereal control diets in which dextrin replaced the cereals and furnished approximately 60, 70 and 76 per cent of the calories showed a similar excellent growth. Where dextrin furnished 84 per cent of the calories, the growth was good but less vigorous than in the cases just referred to. It approximated that indicated by the Donaldson "normal" growth curve. This slower growth can probably be attributed to a somewhat low content of protein calories. It was surprising that even "normal" growth should be obtained on a diet containing no more than 8.5 per cent protein calories. The result is probably due to the unusually high biologic value of the mixture of muscle and liver proteins employed.

The growth obtained with the diets in which milled products such as a breakfast food and hominy, respectively, furnished approximately 84 per cent of the calories (not shown on the charts) was good with the rate of body weight increment per week, standing between those which were obtained with the corresponding whole-grain rations on the one hand and the dextrin diet on the other. The differences, however, were not marked.

Control experiments with a familiar standard experimental ration were conducted to ascertain the possible effect of the summer weather, room environment, etc., on the rate of growth during our experimental period, and thus enable one to compare the growth shown by these "high cereal-calory" animals with that characteristic for the usual laboratory experimental diet. The general trend of the growth curves of these control animals followed rather closely that of the Donaldson "normal" curve and indicated a growth only slightly superior to the "normal." The environmental conditions were therefore demonstrably favorable for growth studies. It may be concluded that diets rich in cereal-calories as constructed here in which cooked whole grain cereals furnish as much as 84 per cent of the energy intake may exhibit a surprising excellence in the nutrition of growth.

The extraordinary gains exhibited by the animals on the 62, 72, 78 and 84 per cent diets of series, which confirmed the work of Osborne and Mendel [5] concerning the remarkable value of combinations with lettuce and liver for growth, led us to test the effect of feeding a standard diet with only one of these supplements instead of both. In the two sets of experiments the growth obtained was good but not as vigorous as through the combined use of the liver and lettuce.

In the series in which whole grain cereals and dextrin, respectively, furnished about 93 per cent of the calories, the superiority of the natural food cereals over purified dextrin as the chief source of energy is demonstrated in remarkable fashion. The animals on the oatmeal and wheat rations all exhibited growth at a rate slightly better than "normal." Those on the corn meal ration showed a growth rate almost identical with that represented by the so-called normal curve, whereas the rats repeatedly placed on the dextrin diet showed a nutritive failure which could be corrected at will by any of the corresponding cereal diets.

The foregoing results indicate unequivocally that, provided the precaution is taken through the inclusion of proper supplements to supply all the essentials of a diet, the proportion of cereal in the ration of the rat can be increased to an extent far beyond any possibility of practical consideration by man.

Skeletal Development.—In view of the contention that cereals, particularly oatmeal, may predispose to rickets,[8] examinations for such bone defects were made as follows: The animal was killed with illuminating gas, and the ribs with the costochondral junctions and

8. Mellanby, E.: 1921. Experimental Rickets, Privy Council, M. Research Council, Special Report Series 61, London.

the long bones of the limbs dissected free. The heads of the humeri and the femurs were split to permit examination of the epiphysial lines.[9] The presence of any enlargement of the costochondral junction—beading—together with "cupping" of the end of the rib would have suggested the presence of rickets, in which case histologic preparations would have been made. Such preparations not only allow one to make an absolute diagnosis but serve as permanent records of the results obtained. Unusual width of the epiphysial lines in the humeri and femora would also suggest rickets and indicate the wisdom of making histologic preparations.

In no cases whatever were any signs of rickets observed in these animals. When it is appreciated that to a certain extent rickets may be regarded as a phenomenon associated with rapid growth, and that these animals showed an unusually rapid growth, the absence

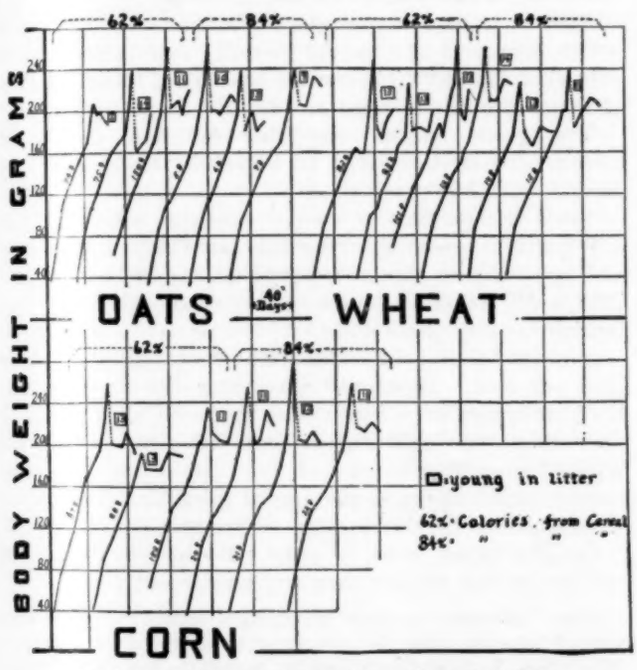

Chart 2.—Growth and reproduction on high cereal diets.

of rickets may be taken as even more indicative of the remarkable biologic value of the rations.

The Blood—Anemia.—Certain types of anemia have been shown to have a dietary origin. It was considered advisable, therefore, to make counts of red blood cells in representative animals from each of the groups subsisting on different diets. The counts all fell within the normal range of values for the white rat.[10]

Dentition.—From time to time the animals were carefully examined in an endeavor to detect any indications of faulty dentition. No signs, such as McCollum and his associates [11] observed in rats fed high-fluorine diets, with which the animals showed abnormal growth, particularly of the incisor teeth, were observed.

Vitamin Deficiencies.—No phenomena indicative of a deficiency of any of the vitamins were observed.

Reproduction.—As fresh lettuce was given daily to all the animals, and studies of Evans and his associates [12] as well as of Mason [13] have shown that this vegetable is rich in vitamin E, it may seem on first thought to have been unnecessary to test these rations for their ability to support reproduction. It should be borne in mind that the intention was to study more particularly these rations with respect to their efficacy during lactation, and in order to study lactation it is first necessary to secure mother rats with litters. Furthermore, the work of numerous investigators has shown quite conclusively that lactation represents a peculiar and interesting physiologic problem. Under the heading of Reproduction are recorded certain facts and observations in connection with the breeding trials that were instituted.

Breeding experiments were conducted with animals raised on the 84, 78 and 62 per cent cereal rations. The 84 and 78 per cent diets were the highest of the "high-cereal" rations that permitted excellent growth. The 62 per cent diet, in contrast to the other rations just mentioned, contained a small amount of lard, which was regarded as another variable that might conceivably have an effect on the results. Breeding trials were therefore conducted with the animals on this diet also. The results with the 62 and 84 per cent rations in which oats, wheat and corn were used are shown in chart 2. It is demonstrated conclusively that the diets were satisfactory for reproduction.

TABLE 2.—*Remarkable Growth Made by Litters Containing Eight Young Rats, When the Mothers Were Fed Diets Constructed as Indicated Below*

Diet	Mother Rat Number	Average Body Weight of Young at 21 Days of Age, Gm.
Oatmeal	5	49
	6	26
	7	49
Wheat	13	41
	14	27
	15	35
Corn	20	41
	21	36
	22	33
Grand average		24
"Normal" average (Donaldson)		23

Diets were constructed as follows:

	Per Cent
Whole grain cereal, cooked, dried	83.5
Meat residue	5.5
Liver, cooked, dried	5.0
Salt mixture (Osborne-Mendel)	4.0
Cod liver oil	2.0
	100.0

And 15 Gm. of fresh lettuce daily fed separately.

All the females on the 84 per cent milled wheat breakfast food calory diet gave birth to litters (curves not shown on the chart). Only one of the females on the hominy diet produced a litter. A second animal failed to reproduce, although mated twice for long periods. Before it is concluded that this high hominy ration is unsatisfactory for reproduction, more tests should be made.

It may be concluded that rations as here constructed, containing 84 per cent or less of their calories in the form of whole grain cereals or as milled wheat and demonstrated to support excellent growth, are also good for purposes of reproduction. The results with a high-hominy diet similarly planned are inconclusive.

Lactation.—This was studied in those mother rats subsisting on the 84 per cent cereal calory rations.

9. Dr. Ethel M. Luce of the Pediatrics Department of the Yale University School of Medicine gave her assistance in making some of the examinations.
10. Jencks, Z.: Am. J. Physiol. **59**: 240 (Feb.) 1922. Smith, A. H., and Bogin, M.: Am. J. Path. **3**: 67 (Jan.) 1927.
11. McCollum, E. V.; Simmonds, Nina; Becker, J. Ernestine, and Bunting, R. W.: J. Biol. Chem. **63**: 553 (April) 1925.
12. Evans, H.: Proc. Nat. Acad. Sc. **11**: 373, 1925.
13. Mason, K. E.: J. Exper. Zool. **45**: 159, 1926.

Each litter born to females on these diets was reduced to eight young, thus subjecting these mother rats to approximately comparable lactation strain. Table 2 summarizes the growth of the young.

Table 2 shows that even the average body weight was 50 per cent higher than Donaldson's "normal" average; and some of the young on the oatmeal series exceeded this "normal" by more than 100 per cent. Inspection of chart 2 shows that the lactating mothers withstood very well the strain of nursing the eight young which grew so remarkably well. The body weights of these mothers did not show appreciable decline throughout the nursing period.

SUMMARY AND CONCLUSIONS

The feeding experiments here reported show that, when suitable adequate supplementary foods are employed, the use of whole-grain cereals and likewise one of the milled wheat breakfast food products so as to furnish as much as 84 per cent of the calories of the diet is compatible with excellent growth, reproduction, lactation and general physiologic well being in the rat. A milled corn product such as hominy was only slightly, if at all, inferior to these products.

The results of diets containing even as much as 93 per cent whole-grain calories approximated those of current "normal" standards. Apparently, therefore, it is almost impossible to set physiologic limits to the amounts of whole-grain cereals that may be included as a chief source of energy in an otherwise "balanced" diet for the rat.

Success with the very large inclusion of cereals as sources of energy in the diet depends on the proper choice of the foods that are used to supplement the cereal.

The observations of Osborne and Mendel concerning the remarkable value of certain combinations of liver and lettuce in promoting growth are confirmed.

It is appreciated that caution must be exercised in applying the results obtained from rat experiments to the nutrition of man. However, consideration of the development of the science of nutrition hardly allows one to contend that results such as those reported in this paper do not have a practical bearing on human nutrition. In our opinion they demonstrate conclusively that cereals may be used by man to a much greater extent than is common in this part of the world, and that nutritive success with high cereal rations is primarily a problem of providing suitable supplements. Furthermore, these supplements, contrary to what seems to be the current belief, need not include milk. This last point is considered in greater detail in another paper.

Play and Mental Habit.—All educators are agreed that the chief purpose of education is the acquiring of an alertness of mind and right mental habits. The attitude of mind which is found in play is the attitude which represents the greatest efficiency in all mental effort; for in all good play there is a complete absorption in the thing at hand, entire forgetfulness of self, and the intuitive following of spirit guidance which leads to the largest result with the least effort. Any work done in this spirit becomes an art. The person who goes forward into mature life carrying into his work this same self-forgetfulness, this same absorption in the activity in hand, this same unconscious following of the guidance of the spirit, will be a poet, an artist, a genius; for these all are essentially grown-up children who have preserved to mature years the simplicity and spontaneity of the child.—Curtis, Education Through Play, p. 58.

CONJUGAL TUBERCULOSIS

FURTHER OBSERVATIONS *

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In a previous paper published in 1920 I [1] reviewed 1,000 successive dispensary cases with reference to the incidence of tuberculosis in husband and wife. Since then I have reviewed 5,000 more cases, making a total of 6,000 examined to date.

In the previous paper I reviewed the literature up to that time. The most notable change in the literature since then on this subject has been the discussion as to whether tuberculosis, the disease, is endogenous or exogenous in origin. This will be discussed later; but I do feel now that with the addition of the further study of 5,000 cases we can take a more definite and conclusive stand with regard to adult infection.

This is a highly important question. It is one in which mankind the world over is interested and is entitled to know. I believe we now have sufficient data at hand to give the right answer.

The great reason why this question should be answered and decided is to know definitely what we should do about prophylaxis.

Since the publication of my previous article I have not found anywhere in the literature any writer who absolutely denies the existence of adult infection. However, a difference in degree of this type of infection can be seen among observers.

Samson [2] found the incidence of conjugal tuberculosis 32.6 per cent. Biemann [3] apologizes for the fact that his percentage of 4.3 per cent is so high. Rowland [4] says that "conjugal tuberculosis is rare." Further, while "ideal conditions for infection exist, infection rarely occurs owing to the age of greatest susceptibility having passed by the time the marriage age is reached."

On the other hand, Ward,[5] who has written more articles on this subject than any other man, says:

> After following up cases of conjugal tuberculosis for some years I take the view that the great majority of the mates of tuberculous husbands or wives do sooner or later show signs or develop symptoms of tuberculosis; but I further believe that the great majority of these infected recover, and make a speedier recovery than most tuberculosis patients. This may reasonably be attributed to an enhanced immunity conferred by the graduated doses of bacilli which they usually receive.

Barnes [6] concludes that:

> 1. The histories of 229 consecutive widowed patients who were admitted to the Rhode Island States Sanatorium from 1905 to 1921 show that ninety-three, or 40 per cent, lost their consorts by death from tuberculosis, a tuberculosis mortality over three times that of the married people of the community.
>
> 2. Immunity from many diseases is short lived and until much more convincing evidence is forthcoming of permanent immunity against tuberculosis conferred by childhood infections, a cautious logic will not accept the confident statements that are being made as to the impossibility or rarity of adult infection.

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* Read before the Denver Sanatorium Association, June 7, 1927.

1. Minnig, Arnold: Incidence of Tuberculosis in Husband and Wife, J. A. M. A. **74**: 1445 (May 22) 1920.
2. Samson, J. N.: Die spaete exogene Reinfektion als Ursache der tertiaren Lungenphthise, Deutsche med. Wchnschr. **51**: 1144 (July 10) 1925.
3. Biemann, F.: Tuberkulose unter Ehegatten, Beitr. z. Klin. d. Tuberk. **63**: 1, 1926.
4. Rowland, Stephen: Conjugal Tuberculosis, Lancet **2**: 1227 (Dec. 13) 1924.
5. Ward, E.: Conjugal Tuberculosis, Lancet **2**: 607 (Oct. 4) 1919.
6. Barnes, H. L.: Conjugal Tuberculosis, Am. Rev. Tuberc. **5**: 670 (Oct.) 1921.

RESULTS OF AUTHOR'S INVESTIGATIONS

In this investigation there was a total of 5,067 successive dispensary cases. These were seen at the Denver Municipal Tuberculosis Dispensary from July, 1919, to early 1927. Of this number, 2,975 were active. Not a single suspicious case is included in this number; 1,054 were female and 1,921 were male; 1,418 were married and 470 were widowed, so that there were 1,888 married or widowed.

Of this 1,888 I found 319 cases, or 16.8 per cent, in which both consorts had active tuberculosis or one or the other died of the disease. This is a much higher percentage than in my previous study, in which I found the incidence only 8.7 per cent. The reason for this may be that I have been much more interested in this phase of the subject and, as a consequence, more on the alert for this type of case.

I was also interested in the incidence of conjugal tuberculosis when the consort was widowed on account of phthisis. Of the 319 patients, 104 were widowed from this cause. Of the 104, or 48 per cent, who were so widowed, fifty consorts had developed active tuberculosis. Of this 319, 181 were female and 138 male. The reason for the predominant number of females being infected may be explained by the fact that the wife is usually the nurse when the husband becomes ill. For curiosity I also investigated how many of this 104 were suspicious and found eleven of these. If these were included, the percentage would be 58. In other words, when there was a massive infection as occurs when one of the consorts died, one out of two developed the disease. This agrees with my previous observations.

Stage of Disease of Patients and Their Consorts

Stage	Patients	Consorts
I	88	22
II	84	34
III	93	27
Suspicious	30	34
No stage given	..	106
Died	24	96
	319	319

Tests of the patients' sputum showed ninety-four positive and eighty-five negative. In 140 cases for some reason or other it was not possible to get the sputum. Among the consorts who were not patients it was necessary to take the patient's word as to the mate's tuberculosis, and the stage was unknown. It must be remembered in any statistical analysis of this kind that it is possible only to say with regard to conjugal tuberculosis how many patients are infected or dead now; it would seem from my observations that if each case could be followed until the patient died the infectiousness would be still more striking.

My observations show something definite; viz., in a large number of cases adult infection is present and a danger. I have shown that while not every adult who is exposed to tuberculosis is going to be infected, yet if he or she is below par, and the consort has open tuberculosis, there is one chance in six that the other is going to become infected. Also if the culture medium is good and the infection is especially massive, as in the case of a dying consort, the chances are one in two that the other will become infected.

It must be remembered that my investigation was only in dispensary cases. I feel that this percentage is high for the general population. In other words, the class of patients from which I draw the foregoing figures represents the lowest stratum in life. This investigation gives us a most important lesson, and that is that the lower the stratum of life, or the more unhygienic the surroundings, the better the culture medium for the tubercle bacillus.

Braeuning [7] made the same observation. He found that in tuberculous families there was six times as much tuberculosis as in the rest of the population, and that among those living in this tuberculous environment, who also lived in unhygienic surroundings, there was three or four times as much tuberculosis as among those in proper living conditions.

This provides some definite information which can be and should be announced to the public. It must be broadcast as it is found. The only way to solve a problem is to present the facts and then work it out in accordance with them. Then only is it possible to know for what to prepare. The thing to do is to explain to the consort how and why to be careful. These observations must be published to the world through the social agencies, the press, and our own propaganda and literature. The danger of conjugal tuberculosis should not be given as an excuse for deserting the consort, which we do see so commonly, but it should be put in the highest possible light as a duty and a wonderful opportunity to help our fellow man.

OTHER OBSERVATIONS

It was rather striking that of these 319 patients with conjugal tuberculosis only eleven were born in Colorado, and of these only five died of the disease, a forcible argument in favor of climate.

I was also interested in another aspect. This was whether, when the woman developed tuberculosis, the man remained faithful to his wife, and when the man developed tuberculosis, whether the wife remained faithful to the husband. I found that in the greater number of cases the man was more faithful to his wife than the wife was faithful to the husband.

I found on inquiry that several other workers were interested in this phase and came to the same conclusion.

In Germany, since the war, Schaefer [8] has made the observation that women with even advanced tuberculosis no longer pay attention to the physician as to the advisability of marriage, but with full knowledge of the facts go ahead and get married so that the husband can take care of them.

Much and Meinecke have affirmed that the auxiliary personnel of consumptive hospitals, and of the annexed services, presents at the end of a relatively short period modifications in the sense of an accentuation of the cutaneous reaction. According to these authors, this would depend on the mild but frequent bacillary doses to which one is exposed in these surroundings.

Maher [9] thinks that the cause of most adult infections is lowered resistance from some other intercurrent bacterial infection or from being exposed for long periods to some dusty occupation. But according to my observations women are more often infected than men in conjugal tuberculosis.

Coming back to the question of endogenous and exogenous infection, does it seem reasonable that one should get a primary infection in childhood, overcome this, and then not be bothered by any further infection

7. Braeuning: Beitrag zur Frage der exogenen Reinfektion bei Tuberkulose, Beitr. z. Klin. d. Tuberk. **55**: 127 (March) 1923.
8. Schaefer, D. G.: Heiraten schwerlungen Kranker, Ztschr. f. Tuberk. **36**: 180 (Nov. 3) 1922.
9. Maher, S. J.: Part Played by Contagion, Am. Rev. Tuberc. **15**: 55 (Jan.) 1927.

from the same or other source? There is now plenty of evidence in favor of adult infection. We have this evidence in man. Animal experiments are not needed. We have the figures, facts, not theories.

It is true that both theories have their strong adherents.

According to the belief in one or the other of these theories the problems of prophylaxis at home, at work, in public life or in the sanatorium take on a different aspect. Please remember where the logic of endogenous superinfection leads us. The hypothesis here is that the immunity of superinfection conferred by a primary infection is sufficient to render every special rule of prophylaxis superfluous.

On the other hand, it is known that bacilli are present in the systemic circulation. This is demonstrated by localizations in the various organs. These localized infections are metastatic. It remains only to determine the causes that produce these metastases.

From a clinical standpoint Ronzoni [10] concludes that "we possess numerous observations in favor of the endogenous origin of pulmonary tuberculosis in the adult." He asserts that there is a reactivation of one or all of the elements of the old primary lesions or by the metastatic diffusion of germs coming from them. He thinks it impossible to determine which of the two modalities is the more frequent. He further asserts that the possibility of symptoms of pulmonary tuberculosis in the adult through exogenous superinfection is clinically established.

In most recent articles the experiences of the war are given as arguments for and against endogenous and exogenous infection. I do not believe that any conclusions can be drawn either way from this source.

I have an interesting problem for the climatologist. As will be remembered, I found that among the 319 conjugal patients eleven were born in Colorado and five of these died. In European countries where great masses of tuberculous patients congregate in sanatoriums, the native death rate was increased. This evidently from the foregoing statistics has not taken place here, or, to be more conservative, not yet. But it will be noted that of the eleven native born, five died. This is a terrible percentage. It is admittedly a small number from which to draw conclusions. We must also remember that it is among the dispensary class. On the other hand, I submit this proposition: Can it be that in this wonderful Colorado climate, undoubtedly the most nearly perfect in the United States if not in the world, we are improving our native sons to such an extent that they do not get the prophylactic dose of tubercle bacilli in childhood and, as a result, when they contract tuberculosis are they so little immunized that they succumb to a primary infection? This would mean, of course, the terrible price of a deadly infection of the most virulent type.

CONCLUSIONS

1. The incidence of conjugal tuberculosis in my previous paper, in which I reviewed 1,000 cases, was 8.7 per cent. In this review of 5,000 cases I found the incidence still greater; namely, 16.8 per cent. It is a singular coincidence that in both reviews, or in the total of 6,000 cases, I found that when one of the consorts died the mate was infected in 50 per cent of the cases. So we must conclude that, when there is a particularly massive infection, if the adult's resistance is lowered he is almost surely going to contract the disease.

2. Hygienic living and intelligent prophylaxis have a marked and evident beneficial effect. My observations in the dispensary class contrasted with my private practice have proved this.

3. Tuberculosis in the mother is the most dangerous contact, and is the more frequent in marital tuberculous.

4. Whether one believes in exogenous or endogenous infection or both, proper prophylactic precautions must be observed. That each bacillus is to be feared is uncalled for because of the very strong natural immunity existing in man.

5. I feel, now that sufficient data are at hand, that it is possible to announce to the world that there is adult infection and that this conclusion should be propagated in an intelligent way through our social agencies, the press, and the physician.

815 Majestic Building.

10. Ronzoni, Gartano: Communicability of Phthisis in Adults, Am. Rev. Tuberc. **15**: 1 (Jan.) 1927.

NECROPSY REPORTS ON PERSONS DYING SHORTLY AFTER THE EXTRACTION OF TEETH*

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From time to time attention has been called to the untoward results following the extraction of teeth. The clinical-pathologic reports of three deaths, occurring within a short time after the removal of teeth, are presented to emphasize again the dangers associated with the extraction of teeth.

REPORT OF CASES

CASE 1.—*History.*—A white man, farmer, aged 44, had had diabetes existing over a period of three years. The patient failed to follow dietary regulations during this period and lost about 25 pounds (11 Kg.) and became weak. He had considerable trouble with all of his teeth, and on April 20, 1920, had two molars removed under gas anesthesia. Four days later the remaining teeth were extracted under gas anesthesia. Considerable hemorrhage followed the extractions. During the next five days the patient became seriously ill and on May 1 became comatose. The family physician recognized the condition as one of diabetic coma and treated the patient accordingly during the next three days but without any improvement. May 4 the patient was admitted to the New Haven Hospital.

The temperature on admission was 98.6 F.; the pulse was 100 per minute; the respirations were 30 per minute, and the blood pressure was 85 systolic and 60 diastolic. The patient was emaciated, semiconscious, and breathing deeply. There was a strong odor of acetone to the breath. The gums were lacerated, sutured in places, and covered with a gray-green necrotic slough from which a purulent material exuded. The heart sounds were distant, feeble and rapid. No urine had been passed for several days before admission.

The laboratory examination showed the blood sugar to be 840 mg. per hundred cubic centimeters of blood, the nonprotein nitrogen of the blood 94 mg., and the urea nitrogen 65.3 mg. The blood serum was thick and yellow. A blood culture was not made.

The course in the hospital was rapidly downward and death occurred about twelve hours after admission and about two weeks following the first dental operation.

The clinical diagnosis was diabetes mellitus with coma; laceration and infection of the gums following extraction of teeth.

Necropsy.—This was performed six hours after death. The principal observations were a hypoplasia and hyalinization of the insular tissue of the pancreas, a diffuse acute inflammatory

* From the Department of Pathology, Brady Memorial Laboratory, Yale University School of Medicine.

reaction involving the pancreas and stomach, and recent necrosis of the myocardium, liver and renal epithelium. The necrosis in these organs was manifested by the vacuolization of the cells associated with focal areas of necrosis.

From the clinical standpoint the case was regarded as one of aggravation of the diabetic condition by the extraction of many teeth followed by infection of the lacerated gums.

CASE 2.—*History.*—A white man, an executive, aged 56, had his upper teeth removed about two months before admission because of pyorrhea alveolaris. During the next five weeks he complained of severe pains all over the body but particularly in the left side and the middle of the back. Three weeks before admission the patient had the last of his teeth removed. Several days later vomiting began and occurred every evening for a week. There was very little nausea and no relation of the vomiting to meals. There was no loss of weight, no jaundice, and no diarrhea. Varying degrees of dizziness were present. Dyspnea and palpitation were present on slight exertion. Since the onset the patient had had difficulty in remembering and using the correct words in speech. During this phase of the patient's illness the examination by the family physician showed that all the upper teeth were absent and that the condition of pyorrhea alveolaris was present about the lower teeth. The blood pressure was 158 systolic and 82 diastolic. The pulse was 96 per minute and regular. The heart was not enlarged to percussion. A rough systolic murmur was heard over the aortic area. The urine contained 35 per cent of albumin (Esbach), no sugar, numerous hyaline casts, and a few granular, epithelial and fatty casts. The twenty-four hour specimen (970 cc.) was acid, and had a specific gravity of 1.019, and contained a faint trace of albumin and numerous hyaline casts. Because of the unimproved condition and associated nausea and vomiting, the patient was admitted to to the New Haven Hospital, Aug. 4, 1925, for further observation.

On admission the physicial examination showed a normal temperature and pulse, and normal respirations. The blood pressure was elevated to 176 systolic and 90 diastolic. The patient was well developed and obese. The gums were ragged and bled easily. The speech was indistinct at times.

The special laboratory examinations showed a moderate secondary anemia with 3,250,000 red blood cells and a hemoglobin of 63 per cent. The white blood cells and differential count were normal. The specific gravity of the urine ranged from 1.007 to 1.011; a trace of albumin and a few hyaline casts were found. The phenolsulphonphthalein excretion varied between 10 per cent and 3.5 per cent in two hours and ten minutes. The blood nonprotein nitrogen varied between 67 and 77 mg. per hundred cubic centimeters. Blood cultures and the blood Wassermann reaction were negative. The gastrointestinal series was negative. The ophthalmoscopic examination showed edema of the disks and sclerosis of the retinal vessels. The gastric analysis was normal. The cystoscopic examination was negative.

After a thorough study, a diagnosis of chronic nephritis with uremia was made. A diet of limited proteins was tried but the symptoms abated little. The nausea and vomiting recurred. At times the patient was irrational. August 27, twenty-three days after admission, the patient was discharged as unimproved.

During the first week at home the condition remained unchanged until the nausea and vomiting became more severe. The patient became semistuporous and the breathing became rapid. Because of urinary retention the patient was readmitted to the New Haven Hospital, September 8. Examination did not show evidence of urinary obstruction. Two days later heart block developed and death occurred shortly after. The fatal outcome occurred five weeks after the first admission, eight weeks after the onset of the severe symptoms, and thirteen weeks after the first extraction of teeth.

The clinical diagnosis was chronic nephritis and uremia.

Necropsy.—The heart was hypertrophied uniformly and weighed 600 Gm. The coronary vessels, pericardium, endocardium and valves did not present gross changes. The myocardium was brown-red with countless small, light brown areas scattered through it. Microscopically the fibers were hypertrophied and there were numerous small focal areas of necrosis in which the nuclei of the cardiac fibers were absent and the cytoplasm was either vacuolated or broken up into coarse, light-staining, opaque granules.

The liver weighed 1,900 Gm. The tissue was light brown with many small, dark red areas, 1 mm. in diameter, scattered in it. Microscopically these red areas were seen to be extravasations of red blood cells into necrotic zones about the central veins.

Each kidney weighed 225 Gm. They were large, pale organs with a smooth cortex in which there were numerous small hemorrhages. The glomeruli and striations were not visible in the swollen tissue. The mucosa of the pelvis was swollen and red. The glomerular tufts were swollen so as to fill the glomerular space. These spaces did not contain any exudate. The cells of the glomerular tuft were swollen, vacuolated, and often entirely necrotic. Adhesions between a portion of the tuft and the capsule were seen. The lining epithelium of many tubules was necrotic, was vacuolated, or sloughed off into the lumen to form a cell cast. Many of the tubules were filled with casts of blood cells as well as epithelial cells and pink-staining hyaline casts. The interstitial tissue was edematous and congested and contained both focal and diffuse accumulations of mononuclear and polymorphonuclear leukocytes. There was considerable exudate and hemorrhage beneath the epithelium of the pelvis.

A small, firm, nonencapsulated adenocarcinoma of the prostate had invaded the bladder wall and seminal vesicles and formed a lump 5 mm. in height just above the vesical orifice.

The anatomic diagnosis was: Primary: A. Recent operation (removal of teeth for pyorrhea alveolaris); multiple focal necroses of the myocardium; central necrosis of the liver; *chronic diffuse nephritis;*[1] ascites; cardiac hyperthrophy.

B. Carcinoma of the prostrate with extension to the bladder and seminal vesicles; chronic cystitis and pyelitis.

CASE 3.—*History.*—A white man, laborer, aged 43, had a toothache and swelling of the right side of the face three weeks before admission. One week later the first and second upper right molars were removed. Before extraction, the dental surgeon noted a chronic alveolar abscess of the latter tooth with a fistula discharging pus freely. After removal of the tooth, the area was curetted. In the next two weeks the local condition became worse. The swelling of the right cheek increased and became more painful. The patient was referred to the New Haven Hospital.

On admission the temperature was 103 F., the pulse was 84, and the respirations and blood pressure were normal. The patient was acutely ill. The examination was negative except for the mouth and teeth. The teeth were carious, and pyorrhea alveolaris was present. The first and second upper right molars were absent and the tissue in that area was necrotic, red, swollen, and coated with a green-yellow slough. Pus exuded from the raw surfaces.

On the day following admission, while the wound was being probed and examined by the attending dental surgeon, the patient had a severe chill followed by a rise in temperature to 104 F. There was a purulent discharge from the right nostril. The roentgenograms were interpreted as showing inflammation of the right maxilla and a probable infection of the maxillary sinus (right). The method of treatment during the next two weeks consisted of spreading open the infected area with a clamp, irrigating, and then packing the wound. The patient's condition grew worse, and two days before death the signs of meningitis and possible cavernous sinus thrombosis developed. Death occurred about six weeks from the onset of the toothache and five weeks after extraction of the teeth.

The clinical diagnosis was cellulitis of the face and acute meningitis.

Necropsy.—The presence of many abscesses in the viscera was noted, from all of which *staphylococcus aureus* was obtained on culture. A diffuse infection about the tissues of the right upper jaw, right maxilla and maxillary sinus was

1. The diagnosis of chronic nephritis was made because of the interpretation of this case as starting as an acute progressive kidney lesion dating from the removal of teeth three months before death. It was used to designate a progressive lesion as distinguished from the old meaning of chronic nephritis, which, in reality, was a healed process.

found. The maxillary division of the fifth nerve was surrounded by an exudate which appeared to enter the cranial cavity along its sheath and to form a local abscess about the right gasserian ganglion and then extend to the meninges. The dura mater was ulcerated in that portion which covered the right gasserian ganglion, and the tip of the right temporal lobe was embedded in the abscess area. An abscess of this lobe of the brain ruptured into the lateral ventricle, filling the ventricles with a green-yellow purulent material. The presence of a similar exudate in the subarachnoid space of the brain was also noted. The blood sinuses and the frontal, ethmoid and sphenoid air sinuses were opened and found to contain no gross purulent material. The abscess in the right middle fossa of the skull extended about the hypophysis and into the left orbital tissues. Gross and microscopic examinations of the cavernous sinuses did not show evidence of their involvement.

The anatomic diagnosis was: Primary: A. Pyorrhea alveolaris; recent operation (extraction of teeth); osteomyelitis of right maxilla; acute maxillary sinusitis; extension of infection along the right maxillary nerve to right semilunar ganglion, extradural space, and tissues about hypophysis and left orbit; fibrinopurulent meningitis (1); abscess of right temporal lobe of brain with rupture into ventricle (1); multiple abscesses of viscera (1).

The bacteriologic diagnosis was (1) *Staphylococcus aureus.*

COMMENT

The first two cases illustrate the serious complications of extraction of many teeth in a patient whose general condition is poor as a result of an existing chronic disease. The association of acute infections and severe clinical symptoms in diabetes is well known. The second case represents a widespread cell degeneration which undoubtedly started following the extraction of a large number of teeth. It is unusual for the pathologist to have the opportunity to study the renal lesions in such a case with the time interval approximately known.

Clinical Notes, Suggestions and New Instruments

INTRACARDIC INJECTION OF DEXTROSE IN A CASE OF INSULIN HYPOGLYCEMIA *

STANLEY W. IMERMAN, M.D., CHICAGO

Mrs. R. K., aged 54, was admitted into the ward service of Dr. Ralph Bettman, Michael Reese Hospital, Chicago, Aug. 10, 1927, with the complaint of gangrene of the first toe of the right foot of six months' duration. She had been treated for diabetes mellitus, and in spite of the fact that the urine was sugar free without the use of insulin, the gangrene had progressed. On admission a mild generalized arteriosclerosis was found. The great toe was in a condition of dry gangrene to the proximal end of the first metatarsal joint. There was no evidence of toxic absorption. On admission the leukocyte count was 12,500; the blood sugar was 220 mg.; the urine was sugar free. The blood pressure was 164 systolic and 70 diastolic.

Amputation of the right toe was done, August 15. Following this the blood sugar was 276 mg. The urine contained acetone, one plus albumin, and 0.59 per cent sugar (2.8 Gm. in twenty-four hours). She was was placed on 15 units of insulin three times a day and a maintenance diet, but, in spite of this, sugar continued to be present in the urine. The wound failed to heal and a second amputation below the knee joint was done, August 25. Laboratory examination, September 7, revealed: blood sugar, 388 mg.; urine, 1.6 per cent sugar (0.15 Gm.) and a trace of acetone; leukocyte count, 54,000.

The wound failed to heal and the stump became gangrenous in spite of a maintenance diet and 25 units of insulin three times a day. At 4:15 p. m., September 9, the patient was given her regular dose of 25 units of insulin. At 7 p. m. she complained of weakness and a chilly sensation. It was not noted whether or not she had eaten all of her evening meal. Because of her previously increasing blood sugar and the progressive gangrene and because of her rapidly developing unconsciousness, it was thought that she had gone into diabetic coma. On this assumption, 25 units more of insulin was given at 7:02 p. m., about three hours after the last dose, with a covering amount of dextrose by rectum. The latter was expelled. A catheterized specimen of urine at this time was found to contain no sugar.

It was apparent that the patient was in a condition of "insulin shock." Sterile dextrose solution was at hand, but no instruments were ready for intravenous injection, aside from a 20 cc. Luer syringe and a lumbar puncture needle, which had been sterilized for use in another case. The pulse was fast failing and the patient was moribund. Because of difficulty experienced previously in entering the veins of this patient, it was not deemed wise to attempt to do so now, as any further delay might be fatal. An intracardiac injection was decided on as the very last resort. This was accordingly done by means of the sterile syringe and the lumbar puncture needle, and 10 cc. of 20 per cent dextrose was injected. At the end of two minutes, the patient had recovered consciousness. By this time, instruments had arrived for the open method of intravenous injection. Eighty cubic centimeters more of 20 per cent dextrose was given intravenously. The patient made a good immediate recovery and seemed not to suffer ill effects.

She subsequently died from bronchopneumonia following the opening of an abscess of the thigh of the amputated extremity, September 14. A diligent search of the literature has failed to reveal the intracardiac use of dextrose as an emergency measure in apparently fatal hypoglycemia.

* From the Surgical Service of the Michael Reese Hospital.

SPONTANEOUS RUPTURE OF THE HEART WITH CONGENITAL SOLITARY KIDNEY

MAGNUS C. PETERSEN, M.D., ST. PETER, MINN.

L. C., a married woman, aged 60, a nullipara, was a patient in the St. Peter State Hospital for seven years, being admitted, Feb. 17, 1920. On admission the physical examination revealed nothing abnormal except a slight increase in temperature which subsided in the course of a few days. Urinalysis showed a specific gravity of 1.035, a slight trace of albumin, and many pus cells. The blood Wassermann reaction was negative. She had many poorly systematized delusions of persecution and auditory hallucinations, to which she responded actively. During the stay in the hospital she was in good physical condition. Occasionally she would become very profane and threatening, but she was quiet the two weeks preceding death.

On the forenoon of July 16, 1927, she was feeling well and joked with the other patients while bathing. When stepping out from under the shower she suddenly fell forward, gasping for breath. She became cyanosed and lost consciousness immediately. Death occurred a few minutes later before the physician could reach her.

No scars, bruises or other evidences of violence were found at necropsy. The pericardium was distended with blood. The heart was small, weighing only 285 Gm. The valves were normal and the musculature firmly contracted. A tear 3.5 cm. in length, parallel to the long axis of the heart, was noted in the posterior wall of the left ventricle equidistant from the longitudinal sulci but somewhat nearer the coronary sulcus than the apex. The edges were ragged and the course through the musculature irregular. There was marked sclerosis of the coronary vessels but no thrombosis. Microscopic section showed fatty degeneration of the myocardium.

The right kidney and ureter were absent. The left kidney was large, weighing 220 Gm. Otherwise it was normal both in structure and in blood supply. The urinary bladder was relaxed and the walls were very thin. It contained a few cubic centimeters of clear yellow urine. No evidence was found of any trigon, the single ureteral orifice being in the median line. All other organs, including the brain, were normal.

Special Article

THE INFLUENZA EPIDEMIC OF 1918: III

EDWIN O. JORDAN, M.D.

CHICAGO

PART 1. PREVENTIVE MEASURES (Continued)

(Continued from page 1693)

[EDITORIAL NOTE.—The articles in this series are chapters from a book by Edwin O. Jordan which is being published by the American Medical Association Press assisted by a grant from the Committee on Scientific Research. The book will soon be ready for distribution.]

E. PROPHYLACTIC INOCULATION

Following the analogies suggested by the successful use of prophylactic inoculation against typhoid and some other infections, a similar method was employed to some extent against influenza. The swift onrush of the pandemic, however, left little time for the preparation and development of methods. In some instances the height of the outbreak had passed before prophylactic inoculation was completed or even initiated. In certain localities pure culture vaccines were used; in others, mixed cultures of several bacterial species. For these and other reasons comparable data, indeed valid data, are not abundant. The primary uncertainty as to the nature of the true causal agent was and is a decisive factor.

It seems desirable to discuss some of the conditions that determine the reasonableness of conclusions drawn from attempts at protective inoculation (cf., also, McCoy 1919). Other parts of this summary contain many examples of factors that affect the attack rate in influenza.

1. *Age.*—There is no doubt that persons of certain ages (e. g., 5-9) have been attacked in far higher proportion than those of other ages (e. g., 60+) living in the same locality. In a canvassed group in Baltimore, the case rate per thousand was 300 for the 25-29 year individuals, and 120 for those of 55-59 years. Any comparison therefore between a vaccinated and an unvaccinated group should deal with persons of approximately the same age.

2. *Epidemic Stage.*—It hardly needs argument to show the fallacy of comparing the attack rate in an entire community with the attack rate in that portion of the community which is vaccinated during the progress of the epidemic. Such a procedure would inevitably lead to the inclusion of a relatively large number of naturally immune persons among the vaccinated and so to the mistaken semblance of a lower attack rate due to vaccination. In an instance which I have recorded (Jordan (1919 c), a sudden outbreak of influenza caused 101 cases in a few days in a group of 234 men. It was at once proposed to vaccinate the rest of the group, but for certain reasons this was not done. Only one additional case occurred in the group. It is evident that had vaccination been carried out as proposed the cessation of cases might have been attributed to that factor. In such a report as that of the use of influenza vaccine at the Wrentham (Mass.) State School (Wallace 1919) it is difficult to interpret the results because the full value of this disturbing factor is not known. Similar objections may be made to accepting at its face value the work of Greeley (1918), Rosenow and Sturdivant (1919), and Kanazawa (1920).

3. *Other Determining Factors.*—Various factors, some of them not clearly understood, have an important effect on the case incidence in different groups of people in the main similarly circumstanced. Among these are the degree of exposure to original sources of infection; closeness of association, as in barrack life; the existence of special opportunities for dissemination of contact infection, as perhaps from handling contaminated eating utensils, and similar causes. As already pointed out, the attack rate in two sections of the students army training corps of the University of Chicago was in one instance 398, in the other 39, although the men in the two sections were all of approximately the same age, lived in the same neighborhood and were housed and fed under substantially identical conditions. The attack rate among the employes in the thirty-four Chicago telephone exchanges ranged from 30 to 270 per thousand, although ages and working conditions in the several exchanges were not materially different (Jordan, Reed and Fink 1919). In New York City, the 120 child-caring institutions surveyed by MacAdam (1919) likewise showed a great variety of attack rates, ranging from 0 to 100 per cent.

These illustrations show that since great variation may occur in different groups of unvaccinated individuals, any proper comparison between vaccinated and unvaccinated groups can be made only with great caution. It is evident that a reasonably satisfactory procedure would be the vaccination of half the population of an institution before influenza had appeared in it. Even under such circumstances it would not always be safe to postulate the existence of identical opportunities for exposure and contact dissemination throughout the entire group. Successful results would have to be repeated many times under somewhat diverse conditions, as they have been with typhoid vaccine, in order to permit satisfactory conclusions.

4. *Unknown Local Influences.*—It has been shown that different localities have suffered unequally from influenza. In the Maryland survey of the U. S. Public Health Service, the case incidence rate per thousand was 233 for Baltimore, 410 for Cumberland and 594 for Lonaconing (Frost and Sydenstricker 1918 a). The difference apparently is not due to population density. Three rural districts in the same state (1,530 persons canvassed) had a case incidence rate of 324.

Similar differences are observable in the death rates from influenza and pneumonia (all forms) in certain large cities.[136] In San Francisco the annual rate per thousand for the period from Oct. 12, 1918, to Jan. 25, 1919, was 25.8, and for Philadelphia (Oct. 5-Jan. 25) 24.7, while it was 8.5 for Grand Rapids, Oct. 12-Jan. 18) and 10.0 for Minneapolis. It is unknown how far such striking dissimilarities in death rate are to be attributed to differences in attack rate in the several localities and how far to differences in case fatality. There is reason to believe, however, as shown in the Maryland statistics, that the proportion of population attacked by influenza was considerably higher in some cities than in others, although exact morbidity records are not generally available. Comparisons of attack rates between vaccinated and unvaccinated communities are therefore open to the objection that very considerable divergences in influenza prevalence may occur between neighboring communities in which no one at all has been vaccinated. The meaning of these local disparities is still quite obscure.

136. Pub. Health Rep. **34**: 225, 1919.

In addition to such sources of error as are indicated in the preceding paragraphs, the difficulties of evaluating the results of prophylactic inoculation have been increased by the lack of uniformity in the vaccines employed, so that each experiment is a law unto itself. Pure cultures of certain strains of the Pfeiffer bacillus have been used in some observational units, and mixtures of a variety of mouth and throat organisms in others. Direct comparison is not possible.

Specific instances of attempts to carry out prophylactic inoculation will throw further light on the points discussed.

(*a*) Pfeiffer Bacillus: In a number of instances, pure cultures of the Pfeiffer bacillus have been used for prophylactic inoculation. Sahli (1919) was one of the first to experiment in a small way in this field, but emphatically warns his readers against expecting too much from a method "wholly in the experimental stage." Crofton (1919), who used a Pfeiffer bacillus vaccine, considered the following results significant: (1) That of forty-one men in a racing establishment at Mullingar, four were inoculated and escaped infection, the others all having the disease; (2) that of the inoculated attendants at the Mullingar District Asylum 4 per cent had influenza, and of the uninoculated, 50 per cent; (3) that at University College, Dublin, 21 per cent of the inoculated were affected, and 44 per cent of the uninoculated.

One of the most extensive series of observations was conducted in Massachusetts with a vaccine prepared by Leary, who has carefully described the technic employed by him in the vaccine preparation (Leary 1918; cf., also, Malone 1921 b).

A carefully planned and controlled experiment with the Leary vaccine was carried out in the Monson State Hospital for Epileptics (Hinton and Kane 1918-1919. Approximately half of the patients were vaccinated, and as far as possible this was done by vaccinating a patient in every other bed of a ward or room. The results obtained were entirely negative: no protection was afforded against attacks of influenza, and it was noted that some of the patients having the severest reactions from the vaccination developed influenza, although the interval was from four to thirty-six days after they had received the vaccine.

At the Rutland (Mass.) State Sanatorium for Tuberculosis, the Leary vaccine was administered to 263 patients and employees at the height of the epidemic, and "the only cases developing afterward were among those who had received the vaccine." At other sanatoriums in Massachusetts, the results of vaccination were almost equally inconclusive (Hawes 1919).

The Leary vaccine was also used at the Rhode Island state sanatorium with the result that neither morbidity nor mortality was significantly affected (H. L. Barnes 1918). Similar instances of negative results in carefully controlled groups of adequate size are cited by McCoy (1919).

A committee of well known experts, appointed by the State Health Commission of Massachusetts to study the value of Leary's vaccine (Massachusetts, 1918), reported as follows:

> The evidence at hand affords no trustworthy basis for regarding prophylactic vaccination against influenza as of value in preventing the spread of the disease, or of reducing its severity. The evidence from the present epidemic, though meager, suggests that the incidence of the disease among the vaccinated is smaller than among the nonvaccinated. The Board, therefore, concludes that further experimental evidence should be collected.

A vaccine prepared from ten freshly isolated strains of Pfeiffer bacillus was used by K. F. Meyer (1919) and his associates in San Francisco. The method of preparation was similar to that published by Leary. The nurses at the University of California Hospital constituted a carefully controlled group of people. During the first wave after the vaccination, 21.5 per cent, and during the second wave, 32.7 per cent of those vaccinated contracted influenza at a time when, on theoretical grounds, the effect of the vaccine might be expected to reach its maximum. During the same period covered by these figures, the morbidity among the unvaccinated nurses of the San Francisco Hospital was 33.8 per cent. The figures for civilian groups are thought also to indicate that the vaccination failed to prevent influenza infection, and are considered by Meyer to present proof that prophylactic vaccination with a polyvalent Pfeiffer bacillus vaccine failed to confer protection against pandemic influenza.

Vaccines prepared from the Pfeiffer bacillus by others have not proved prophylactically effective (e. g., Wadsworth 1919; Haythorn 1919).

(*b*) Other Vaccines: In some instances, other vaccines prepared from a single kind of micro-organism were used. Katzman (1919), in Denver, used a vaccine composed of a hemolytic streptococcus with the result that both influenza morbidity and mortality rates were thought to be lowered.

The inconclusive results obtained with a vaccine prepared from *Bacterium pneumosintes* have been discussed in another section.

(*c*) Mixed Vaccines: Mixed vaccines were apparently usually administered on the hypothesis that since secondary invasions with a variety of micro-organisms constitute an important feature of attacks of influenza, protection against these secondary micro-organisms should be sought. It was assumed that many serious complications would be avoided if these secondary invasions could be prevented. Accordingly, pneumococci and streptococci, along with the Pfeiffer bacillus, constitute the main ingredients of the mixed vaccines. The composition of the vaccines and the inoculation intervals vary within wide limits. Minaker and Irvine (1919) employed a vaccine containing 5 billion Pfeiffer bacilli, 3 billion each of the three fixed types of pneumococci and 100 million hemolytic streptococci in 1 cc. Three doses of respectively 0.5, 0.8 and 1 cc. were given at three day intervals. The vaccine of McCoy, Murray and Teeter (1918) contained per cubic centimeter 500 million each of Pfeiffer bacilli, the three fixed types of pneumococci and *Staphylococcus aureus;* it also contained 1.5 billion group IV pneumococcus and 1 billion *"Streptococcus hemolyticus;"* three doses of respectively 0.5 cc., 1.0 cc., and 1.5 cc. were given at forty-eight hour intervals. Rosenow's vaccines (Rosenow and Sturdivant 1919) contained per cubic centimeter 3 billion pneumococci of the fixed types (I = 1 billion; II = 1.4 billion; III = 0.6 billion); 4 billion of group IV pneumococci, including certain "allied green-producing diplostreptococci" described by Rosenow; 2 billion hemolytic streptococci, and 1 billion of *Staphylococcus aureus;* the first inoculation was 0.25 cc., the second 0.5 cc. and the third 0.75 cc., injection being made "not oftener than once a week." Some dosages contained much smaller amounts than these. Leishman's vaccine, used in the British army (Leishman 1920), contained only 60 million Pfeiffer bacilli, 200 million pneumococci, and 80 million streptococci per cubic centimeter,

half this amount being given for the first injection and the full amount for the second and final injections after a ten day interval.

Most of the mixed vaccines contained pneumococci, streptococci and Pfeiffer bacilli, although the latter were omitted from Rosenow's formula without seemingly affecting its efficacy. *Staphylococcus aureus* did not appear in Minaker and Irvine's vaccine, but successful results were reported just the same. Other organisms were sometimes introduced into the vaccines, *M. catarrhalis* by Watters (1919) and by Grey (1919); parameningococci by Kraus and Kantor (1919), and *Bacillus septus* by Simey and Eyre (1922). Additions or omissions seemed to make little difference; in no instance was the value of the vaccine impaired.

An extensive use of mixed vaccines was made by Rosenow (1919 a), who was inclined to believe that success attended the practice. His conclusions have not been generally accepted.[137]

The use of a mixed vaccine at several points on the Pacific coast by Minaker and Irvine (1919) was believed by its sponsors to confer "a noteworthy degree of protection against influenza and its complications," but the data as presented are susceptible of another interpretation.

TABLE 103.—*Incidence of Influenza and Pneumonia* *

	Vaccinated	Not Vaccinated
Persons in group	390	390
Number developing influenza	119	103
Number developing pneumonia	23	17
Deaths	10	7

* From McCoy, Murray and Teeter 1918.

At about the same time that the observations of Minaker and Irvine were being carried on, and in the same region, McCoy, Murray and Teeter (1918) conducted a carefully planned and controlled experiment on the use of a similar vaccine. The persons vaccinated were patients under 41 years of age at a state institution for the insane. The procedure was carefully adapted to furnish the information desired.

"In each ward of the hospital a list was made of all patients aged 41 or under, and each alternate patient was vaccinated, the remainder being considered as controls. . . . The vaccination was completed, November 15, and fortunately the institution remained free from influenza until November 26." Table 103 shows the results in the two groups up to Dec. 9, 1918. "It appears clear from the evidence afforded by these observations that no protection was afforded by the vaccine."

Among the numerous observers who have reported favorable results from the administration of mixed vaccines are Friend (1919), who, however, attributes the apparent immunity of the boys at an English public school partly to careful supervision and various environmental factors as well as to vaccines; Eyre and Lowe (1918); Cadham (1919); Eagleton and Butcher (1919); Grey (1919); Kraus and Kantor (1919); Penfold (1919); Cherry (1919), and Cumpston (1919), who note that the smaller death rate in the inoculated group is to some extent accounted for by early hospitalization; Watters (1919), who recognizes that reservations are necessary; Kitano (1920); Leishman (1920); Yabe (1921); Simey and Eyre (1922), and Bernard and Thomas (1924).

137. Prophylactic Inoculation Against Influenza, editorial, J. A. M. A. 73: 44 (Jan. 4) 1919.

Not all observers have been able to satisfy themselves of any protective effect (cf. Haythorn 1919). Sarkar (1922), whose figures on their face are somewhat favorable to the protective influence of the vaccines, nevertheless concludes conservatively: "There are no comparisons available which are both logically and statistically sound." In the Japanese navy, a vaccine composed of Pfeiffer bacilli and pneumococci was extensively used, but influenza apparently visited the inoculated as indiscriminately as the uninoculated (Hori 1921). Tanaka (1922), also, could not find evidence that protection resulted from the use of this vaccine administered (two doses) from one to three months before the attack. Gibbon and Bensted (1921) did not observe protection following vaccination of barrack troops in Dublin, in 1920.

In certain state institutions of Illinois, a vaccine consisting of Pfeiffer bacillus, hemolytic streptococci, green-producing streptococci, type III pneumococci (500 million each); type I pneumococci, and type II pneumococci (1 billion each), was given to about 3,000 persons under conditions in which 3,000 uninoculated could be constantly observed for control (Jordan and Sharp 1921). Although the 1920 influenza wave occurred within two months of the completion of vaccination, there was no evidence that inoculation had conferred any degree of protection against an attack. Influenza attacks among the 2,873 vaccinated numbered 118 (4.1 per cent), and among the 3,193 unvaccinated, 152 (4.8 per cent). Seven pneumonia complications with two deaths occurred among the 118 vaccinated patients, and twelve with two deaths in the 152 unvaccinated. Both influenza and pneumonia attack rates were hence slightly lower among the vaccinated, but the difference is hardly large enough to be statistically significant.

It is worth noting that at Camp Wheeler, where a lipovaccine containing approximately 10 billion each of pneumococcus types I, II and III was given to about 13,000 men, the mortality rate in pneumonia secondary to influenza showed little difference as between the vaccinated and unvaccinated groups (Cecil and Vaughan 1919).

Protection against influenza by vaccine inoculation is evidently a broken reed on which to lean. It is not surprising that this is so, since the nature of the causal organism of influenza is still in question. It is disappointing that inoculation with *Bacterium pneumosintes* has not as yet given unmistakable evidence of protective effect; more experiments with this organism should be made. Whether any protection against complications and the secondary infections with pneumococci and other organisms that follow in the wake of influenza can be imparted is uncertain, but deserves further study. Finally, the fact brought out in the section on immunity that an attack of influenza confers no such definite and durable immunity as an attack of typhoid or smallpox makes all attempts at this time to produce immunity by inoculation seem distinctly unpromising.

F. GENERAL MEASURES OF HYGIENE AND SANITATION

Opinion is widely at variance with respect to the efficiency of many of the measures advocated for control. Soper (1919 b) says: "We are as powerless against it [influenza] as were our ancestors against smallpox before vaccination was discovered." D. C. Howard and Love (1920), in discussing the spread of influenza among the troops in the U. S. Army camps,

declare: "In camps where all accepted measures for the prevention of the spread of respiratory diseases were vigorously enforced, the incidence of the disease apparently was as great as in other camps where such measures were less rigidly and effectively applied."

On the other hand, some observers attach great importance to the vigilant enforcement of ordinary hygienic and sanitary precautions. Emerson (1921) mentions as a fact that "at the Savenay Hospital Center (American Expeditionary Forces), where all doors and windows of all hospital buildings were kept open all the time, day and night, no cases of influenza, bronchitis or pneumonia occurred throughout the epidemic of influenza."

Based on the two fundamental assumptions that the disease is spread by direct human contact and that the virus is conveyed in the secretions from mouth and nose, certain preventive measures seem justified. Even though it may not be expedient to close schools or prohibit public gatherings (p. 461), avoidance of overcrowding and insistence on personal cleanliness may conceivably lessen the prevalence of influenza within certain limited groups. This explanation is given by Kauffman (1919) of the extraordinarily low incidence of influenza in the construction force at Camp Custer, Michigan, at a time "when surrounding communities were decimated by disease." Between October 6, when the working force was 1,281, and November 15, when it was 2,572 and therefore including the peak of the epidemic, there were only four cases of influenza and one of pneumonia in this large group. This truly remarkable record is attributed to "thorough sanitary service." A similar explanation is given for the relative exemption of the men at Camp Crane, Allentown, Pa. (Slee 1923). Although the camp was crowded (10,000 men) and surrounding towns suffered heavily, it had only 355 cases of influenza and thirteen deaths.

High importance is similarly assigned by some writers to the efficient enforcement of traditional public health measures, such as preventing the well from visiting the sick, minimizing spitting in public places and on the street, elimination of common drinking cups and roller towels, maintenance of proper ventilation, placarding of houses, prohibition of public funerals, adequate control of public laundries and cleaning of street cars (e. g., Gerhard 1922; cf., also, F. W. Harris 1922; Dopter and de Lavergne 1922).

In a particular group it may be quite impossible to distinguish the influence of the factors instanced by Gerhard, Kauffman and other writers from the effect produced simply by the early segregation of persons showing signs of illness. The simultaneous practice of a large number of putative protective methods, however advisable as an administrative measure, does not permit a clear judgment as to relative values. From analogy with measles, with which, as frequently remarked, influenza presents many similarities, the prevention of direct contact with early cases would seem to promise more than any other method.

An attempt to study intensively the spread of influenza in small family groups in Boston, in 1918 and 1920, led W. T. Vaughan (1921) to conclude that although crowding in families probably played a part, its influence was difficult to trace. Frost (1920 a) found that the attack rate showed a consistent increase as the number of rooms per person decreased. Vaughan also noted a distinct relationship between domestic cleanliness, as rated by sanitary inspectors, and the influenza incidence. "Clean families were invaded less frequently and had solitary cases more often than did dirty families." On the other hand, Vaughan, in agreement with many other observers, was not able to find any connection between the number of influenza cases and the economic status of a family. It is obvious that household uncleanliness and overcrowding may commonly be accompanied by inattention to segregation of the sick.

Most observers of conditions in the army camps believed that crowding, whatever its effect on the incidence of the disease, undoubtedly increased the severity of the infection and its complications. The transports crowded with troops from America to France and England suffered heavily. "In several convoys of transports, carrying a total of about 100,000 troops, there was a loss by death from pneumonia complicating influenza on shipboard of 2 per cent of the strength within three weeks from the date of embarkation in the United States" (Emerson 1921). On land, it was generally believed that crowding of influenza patients and their transportation on trains increased the incidence of pneumonia (cf. Longcope 1919).

There is almost universal agreement that in the poor and crowded neighborhoods in cities the disease was more severe than in the better quarters (cf. Pontano 1918). Delater (1923), however, concluded that the factors of poor quarters and crowding do not deserve the importance that has been attributed to them by some observers. He declares that in France the civil population suffered as severely as the army, in spite of the generally unfavorable sanitary conditions of the military forces.

According to C. Armstrong and Hopkins (1921), on Kelleys Island the apparent influence of crowding, housing conditions, economic status and general sanitation seems to have been exerted in an opposite direction in the 1918 and the 1920 epidemics.

Kellogg (1919), in a valuable study of the measures adopted for the control of influenza in California and elsewhere, makes the following recommendations to local health authorities:

1. Enforce the prompt reporting of cases.
2. Enforce the immediate isolation of cases.
3. Organize and maintain machinery for the proper care of the sick, the furnishing of medical and nursing services, the provision of hospital facilities and distribution of general community relief.
4. Close schools unless adequate nursing or medical inspection services available.
5. Close unnecessary public gatherings, especially in smaller and rural communities (not, however, very effective in larger cities).
6. Enforce the state regulation regarding the wearing of masks.
7. Enforce the state law requiring sterilization of drinking receptacles.
8. Enforce the state law regarding expectoration in public places.
9. Health officers should give publicity to the fact that the burden of responsibility in the control of influenza rests, after all, chiefly upon the people themselves. The difficulty in framing intelligent quarantine measures and the difficulties in diagnosis make it imperative that each citizen should be alive to his responsibilities to the rest of the community. People should remain at home whenever suffering from a cold, even though they have no suspicion that they may have influenza. The isolation of cases is undoubtedly of first importance and this is, after all, largely a matter of education of the general public, with voluntary observance of the common sense demands of the situation on their part.

The New York City Department of Health in 1920 adopted the following regulations governing the isolation of influenza and pneumonia patients:

(*a*) The minimum quarantine period for cases of influenza shall be seven days after the onset of the disease, after which such quarantine period shall continue until discharges from the nose, mouth, throat and ears have ceased.

(*b*) The minimum quarantine for pneumonia shall be twelve days and thereafter until the temperature of the patient has become normal.

(*c*) There shall be a duly licensed practicing physician in attendance.

(*d*) The room or rooms where the patient is to be isolated shall be well lighted and ventilated, and such room or rooms shall be separate and apart from the rooms occupied by other members of the family.

(*e*) All handkerchiefs or other substances contaminated by the discharges from the nose, mouth and throat of persons suffering from these diseases must be properly cared for, so that they shall not in any way constitute a menace to the health and life of others, and they shall be promptly and properly disinfected.

(*f*) The attending physician, nurse or attendant shall be required to insure the use of handkerchiefs or other suitable material to receive the spray or droplets resulting from coughing, sneezing or expectorations of the patient.

(*g*) All unnecessary curtains, rugs, or draperies should be removed from the room to be occupied by the patient. All linens used by or which come in contact with the patient should be kept separate and apart from those used by other members of the family until the same have been boiled.

(*h*) Dry sweeping in the room or rooms occupied by the patient is forbidden.

(*i*) All eating and drinking utensils used by the patient shall be separate and apart from those used by other members of the family, and shall be boiled after each such use.

A comparative study of state regulations for the control of influenza in the United States (Feezer 1920) led to the following summary:

1. Great divergence of practice exists on practically all features of influenza control as represented by the regulations and other measures which are in force throughout the country.

2. It is noticeable that 97.5 per cent of the forty states considered require some system of reporting. The reports are made to the local health officer in 74.4 per cent of these states; to the state health officer in 12.8 per cent, and to both in 12.8 per cent. The method is the same in 92.3 per cent; namely, by mail.

3. There is a great division in practice in quarantine methods; also in regard to placarding.

4. A noticeable fact with regard to the policy of closing public places in time of epidemic is a tendency to shift the responsibility to the local health authorities. A number of comments which were received in addition to the straight answers to the questions indicated a growing inclination to the view that closing is useless.

5. On the matter of public funerals the practice is fairly equally divided.

6. Relative to the use of serum, it is very clear that public health authorities, almost without exception, are unwilling to take the responsibility of making any recommendations whatsoever.

It might be assumed that as in some other infectious diseases a well nourished population would be less affected by influenza than one subjected to any kind of dietary deficiency. At first there was some disposition in certain countries to connect the severity of the 1918 pandemic with the nutritional difficulties brought on by the Great War, but as the facts became known it was generally admitted that there was little to support this view. In countries like the United States, where food of all kinds was abundant and generally available to all classes of society at the time of the pandemic, influenza mortality was notably higher than in some of the other warring countries where foodstuffs were relatively scarce and dear. It was a common observation everywhere that well nourished individuals were no less commonly or seriously affected than were others less favored. Indeed, even in parts of Central Europe where nutritional conditions were probably for a time worse than elsewhere, it was early recognized that influenza prevalence was not due to the effect of malnutrition (cf., e. g., Guth 1919).

Some observers think that a protective influence is exerted by certain drugs. Vico (1919) reports an instance of influenza prostrating nearly every one connected with a hospital except the 400 invalid inmates under the influence of quinine. Silvestri (1919), however, while accepting the fact, attributes such exemption to the malaria rather than to the quinine, and was not able to determine that from 1 to 1.2 doses of quinine daily had any effect in warding off the disease, although such prophylactic dosage was thought to have a marked ameliorating effect on the course of influenza when it developed. It may be recalled that in 1889-1890 quinine was supposed by some to have prophylactic power (cf. Althaus 1892), but the evidence adduced in support of this opinion failed to carry conviction. A preventive effect of either malaria or quinine can hardly be said to be irrefragably established.

Among other medicaments recommended as prophylactic against influenza is iodine (Taylor 1921; Stettner 1922), but the statistics used to confirm this opinion are open to other interpretations. The vaporization of iodine in barracks has been advocated (Beamish 1921).

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

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SATURDAY, NOVEMBER 19, 1927

A HORMONE OF THE SUPRARENAL CORTEX

In any attempt to ascertain the physiologic importance of the various glands and organs of the body, attention is nowadays almost inevitably directed toward the internal secretions. The latter are by no means always specific in character in the sense that they are exclusively the product of a special structure. Some of the internal secretions are merely by-products of metabolism which may serve incidentally to modify the function of some part of the body. Thus, carbon dioxide may act on the respiratory center so as to augment its performance; and urea may stimulate the excretory activity of the kidneys. When, however, an organ reveals its importance because serious consequences follow its removal, one expects to discover that the structure in question ordinarily produces some essential chemical substance—a hormone, or an autacoid, as the British physiologist Schäfer prefers to designate the group of substances specially produced to control metabolic functions. In the case of the suprarenal glands, the problem of discovering the indispensable chemical product has proved to be unusually difficult. It is well established that complete loss of the suprarenals is followed, usually quite promptly, by death. The weight of evidence favors the view that it is the cortex rather than the medulla that is essential to life.

The best known product, epinephrine, specially elaborated by the suprarenals, is derived from the medulla of the glands rather than from the cortex. Despite the profound pharmacologic effects produced by epinephrine when it is introduced into the circulation, the substance is no longer regarded as essential to life.[1] Rogoff and Stewart [2] of Western Reserve University have attempted anew to ascertain whether the suprarenal cortex produces a hormone—a product that possesses the power of definitely increasing the period of survival after removal of the suprarenals. They remark that the only criterion at present at our disposal to determine the efficacy of an extract is its effect on the survival period. This is a severe test because of the fact that all the important derangements which eventually lead to death must be neutralized by the substance. If changes not of themselves causing death could be associated with the loss of the suprarenals, it might be easier to obtain evidence of the existence, in extracts, of a substance capable of preventing them. Although the ideal of "replacement therapy" has by no means yet been attained, the experiments of the Cleveland physiologists with intravenously injected extracts of fresh suprarenals render it, as they state, impossible to draw any other conclusion than that the extracts in some way prolonged the life of the animals in the absence of the suprarenals. They add that there is no reason to suppose that the epinephrine present in larger or smaller amount in the extracts could have had any appreciable influence in prolonging life. No effect of this kind was observed when epinephrine equal to the maximum amount which could have been contained in the dose, given on the assumption that none of it had been destroyed, was injected. In these days of the successful isolation of hormones, it is not too much to expect that the suprarenal cortex also may soon disclose its potent constituent.

1. Glandular Therapy, Chicago, American Medical Association, 1925.
2. Rogoff, J. M., and Stewart, G. N.: The Influence of Adrenal Extracts on the Survival Period of Adrenalectomized Dogs, Science **66**: 327 (Oct. 7) 1927.

CAPILLARY PERMEABILITY

The nutritive functions of the organism inevitably involve the exchange of fluid and substances between the blood and the tissues. Between the circulating medium and the working cells of the body, one or more membranes are always interposed. All substances that play a part in the nutrition of cells, as well as the products elaborated by the latter, so far as they enter the blood stream must pass through the walls of the capillaries. Therefore the problem of the fluid exchange between the latter and their environment is one of great significance alike under normal and under pathologic conditions. Our knowledge of the factors involved has been considerably modified and augmented in recent years. Formerly it was assumed that the walls of the capillaries are incapable of constricting or dilating independently of changes of pressure in the blood circulating in them. According to this view, as Macleod [1] has summarized it, the magnitude of the capillary circulation, the pumping action of the heart being constant, depends primarily on the state of contraction or dilatation of the arterioles from which they spring, and secondarily on the venous pressure; when the arterioles are dilated, the pressure will rise in the capillaries, causing them to become passively dilated, and when the arterioles are constricted, the capillaries in virtue of their elasticity will contract again. This conception of the passive response of the capillaries

1. Macleod, J. J. R.: Physiology and Biochemistry in Modern Medicine, St. Louis, C. V. Mosby Company, 1926.

has been overthrown, however, by the classic studies of Krogh.[2] He has shown not only that they possess powers of constricting and dilating quite independently of the arterioles but also that their caliber when the tissue they supply is at rest is very much less than when the tissue is active, indicating that they exist in a condition of constrictor tone.

The question of how the fluid exchange through the capillary wall is brought about represents a different issue. The capillary membrane ordinarily is not permeable to the proteins of the blood plasma within the vessel walls. These plasma colloids, unable to leave the capillaries, create an osmotic pressure that tends to retain fluid in the blood. The capillary blood pressure works in the reverse way. Accordingly Starling argued more than thirty years ago that, as the capillary endothelium is normally impermeable to the proteins of the blood, the movement of water through the capillary wall depends primarily on the balance between capillary blood pressure and the osmotic pressure of the plasma colloids. An excess of capillary pressure would therefore cause water to pass toward the tissues, while a converse relation would lead to the movement of fluid into the blood. Otherwise stated, the direction and the amount of movement of water through the normal capillary wall is determined primarily by the level of capillary pressure in association with osmotic factors.

Krogh, on the other hand, has stressed the importance of dilatation of the capillary wall in bringing about an altered permeability with a consequent increase in fluid transfer. In his own words, no dilatation of capillaries involving mechanical stretching of the endothelium can take place without being accompanied by an increase in the permeability—an increase which runs on the whole parallel to the degree of dilatation and which allows all the normal plasma colloids to filter off rapidly when the capillaries are strongly dilated. This means that capillary permeability depends primarily on the degree of dilatation, while capillary pressure is of minor significance.

Through the development of an exceedingly ingenious microtechnic, Landis[3] has been enabled, at the University of Pennsylvania, to measure capillary pressure in certain species, to vary it at will in individual vessels, and to observe simultaneous changes in size. In the newest phase of his procedure[4] he has been able to study the permeability of the capillary wall in a quantitative manner; with control of capillary pressure. Diffusible dyes have served as one of the indexes of the fluid exchange. Observations of single capillaries—the mesentery was the location investigated—avert the difficulty presented by the constantly varying diameter, pressure and flow in the vessels which form the capillary network. The investigations of Landis stress the importance of the capillary pressure in determining the fluid transfer. The walls of dilated capillaries are not more permeable than those of constricted vessels. The rate of passage of a dye solution through the capillary wall appears to depend on the level of capillary pressure, not on capillary diameter. It is important to remember, however, that variations in blood pressure as recorded in larger vessels are by no means paralleled by the fluctuations of capillary pressure, since the two may vary independently and often in opposite directions. According to Landis, the relative magnitude of the effects observed, even in injured vessels, indicates that before attributing changes in the rate of fluid movement to a modification of the capillary wall itself, it is essential definitely to eliminate change in capillary pressure as a possible factor. The possibility of actual changes in the endothelium is not excluded by Landis' observations. The passage even of colloids out of the capillaries into the tissue spaces particularly under inflammatory conditions is too well known to require discussion. But ordinarily there appears to be a balance between capillary pressure and the osmotic pressure of the plasma proteins. When this is upset, fluid transfer takes place to restore the equilibrium.

2. Krogh, A.: Anatomy and Physiology of the Capillaries, New Haven, Yale University Press, 1922.

3. Landis, E. M.: The Capillary Pressure in Frog Mesentery as Determined by Micro-Injection Methods, Am. J. Physiol. **75**: 548 (Feb.) 1926; Micro-Injection Studies of Capillary Permeability: I. Factors in the Production of Capillary Stasis, ibid. **81**: 124 (June) 1927.

4. Landis, E. M.: Micro-Injection Studies of Capillary Permeability: II. The Relation Between Capillary Pressure and the Rate at Which Fluid Passes Through the Walls of Single Capillaries, Am. J. Physiol. **82**: 217 (Oct.) 1927.

CHLOROPHYL AND HEMOGLOBIN

Out of the many discussions of hematopoiesis under normal conditions and in disease has arisen the suggestion, if not the conviction, that it is not necessarily the iron of the hemoglobin which must be furnished to the organism but rather the pyrrole nucleus, an organic chemical radical which forms a characteristic part of the make-up of the blood pigment. This opinion has received support, not directly as the outcome of specific experimentation, but rather as a logical conclusion reached after the equivocal and disappointing results of iron therapy in anemias. Attention has therefore been centered on such available food materials as contain the pyrrole group or its derivatives, with the result that red meats and green leafy vegetables are now in vogue as aids in blood formation—the former because of its contained hemoglobin, the latter on the basis of the pigment chlorophyl.

Recent investigation has produced information having an indirect bearing on the question of the relation of the pigment of green plants to that of blood. Bilirubin in the bile is similar to hemoglobin in chemical composition. In one of an extensive series of studies on the origin of bilirubin, Mann, Sheard, Bollman and Baldes[1] have shown that, in dogs suitably prepared for experiment and presumably in normal animals, hemo-

1. Mann, F. C.; Sheard, C.; Bollman, J. L., and Baldes, E. J.: Am. J. Physiol. **76**: 306 (April) 1926.

globin injected into the circulation gives rise to an increased excretion of bilirubin in the bile. In further experiments [2] of a similar nature, chlorophyl was introduced directly into the blood in an effort to establish its possible physiologic relation to bilirubin formation. The results led to the conclusion that the plant pigment is not transformed to bilirubin in the dog. Apparently, therefore, the green plant coloring matter introduced intravenously is not converted to free hemoglobin in appreciable amounts. While the connection between the two pigments might seem to be settled by these observations, caution must be exercised in their interpretation, for chlorophyl given by mouth may undergo changes in the intestine that render it widely different from chlorophyl injected directly into the blood.

However, a new case for the green plant pigment has been made by Dye, Medlock and Crist,[3] who observed that the outer green leaves of head lettuce contain a greater concentration of vitamin A than the inner bleached part. They further suggest that there is a probable relation between chlorophyl and this food factor. These observations are of considerable significance in this day, when the importance of minute quantities of certain dietary essentials is appreciated. The recent studies on chlorophyl illustrate the truth, frequently emphasized in physiology, that, while the value of a given substance is questioned in one direction, its worth may be demonstrated from another point of view.

Current Comment

HEMOPHILIA IN RELATION TO BLOOD GROUPS

The possibility of a relationship between hemophilia and the four human blood groups distinguished by isohemagglutination is suggested in the common quality of inheritability. Hemophilia as a sex-linked character may be transmitted through the mother, but except in certain instances in which the father and the mother (recessively) are both hemophilic it appears only in the sons, while the chief factors determining the blood groups are transmitted directly from parent to child without evident relation to sex. In following the suggestion to the study of blood grouping in hemophilic families, Kubányi [4] has undertaken no theoretical discussion of the probable mechanism of relating a sex-linked character with one not so linked. His first report concerns a hemophilic patient who with his mother and sister belonged to group 2, while his unaffected brothers belonged to group 3. More recently in a study of the Mampel family of Heidelberg, whose record in regard to hemophilia has been followed for more than a hundred years, the thirty-six members examined all belonged to either group 2 or group 4. Three of the four men who were severely affected but survived belonged to group 4; no nonhemophilic man belonging to group 4 was noted; and the daughters in these families were all in group 2. The interesting note was made that all the men who married into these families were in groups 2 and 4. As Kubányi states, the suggestions from these results are manifold, and further studies on the children of the daughters in the present generation are looked forward to as a possible source of enlightenment. The frequent occurrence of group 2 might be merely coincident with the general prevalence of this group in the races represented in the study; but with the attention thus directed other close relationships of group 2 substances, as with the Forssman antigen and with spermatozoa from group 2, take on new interest in regard to a possible connection with hemophilia. In general, attempts to correlate blood groups with the occurrence of certain diseases have proved inept.

2. Bollman, J. L.; Sheard, C., and Mann, F. C.: Am. J. Physiol. **82**: 239, 1927.
3. Dye, M.; Medlock, O. C., and Crist, J. W.: J. Biol. Chem. **74**: 95, 1927.
4. Kubányi, Andreas: Investigation of Blood Grouping in the Hemophilic Mampel Family of Heidelberg. Klin. Wchnschr. **6**: 1517, 1927.

BROADCASTING BUNCOMBE

Whatever else may be said of the quack and the faddist, they must be given credit for enterprise. The sheet anchor of the dispenser of pseudomedical buncombe, no less than of the out-and-out quack, is publicity. In the not very distant past, the quack and the faddist had the entrée—at advertising rates—to the majority of the newspapers of the country, and thus was made the point of contact between sucker and suckee. But, gradually, public opinion forced at least the better class of newspapers to be more circumspect in the space that they sold to those who offered panaceas for human ailments, and today the majority of newspapers of wide circulation do not cater to the business of the medical faddist or the quack. With that avenue closed, it became necessary for these gentry to seek other fields of publicity, and it was but natural that they should turn to the latest wonder of modern science, wireless telephony—the radio. This field had three elements in its favor: first, its novelty; second, the fact that the spoken word is even more effective than the written word in carrying conviction; third, and most important, that the business of broadcasting is in its infancy and its code of ethics is naturally low. Broadcasting in the United States is a commercial venture. Generally speaking, the broadcasting station is out to sell time on the air, just as the newspaper is out to sell space on paper. It is natural, therefore, that these stations should look with favor on any commercial organization that is willing to pay the price the station asks for puffing its particular line of goods. Thus it is that we who are radio fans have our ears assailed almost nightly with some pseudomedical fad, or the exploitation of some crude piece of quackery. One of the earliest entrants into this field was the "Palmer School of Chiropractic," which has its own broadcasting station, WOC, at Davenport, Iowa, whose programs, unobjectionable in themselves, keep before the radio listener the fact that there is an alleged educational institution devoted to the "science" of backpushing. Then there is that enterprising quack who specializes on "rejuvenation" operations and who

practices, apparently, without let or hindrance by the state authorities, from Milford, Kansas—John R. Brinkley, who owns and operates KFKB. Station WHT some months ago was broadcasting with great regularity the alleged virtues of a "patent medicine," Salicon, a preparation that the A. M. A. Laboratory found to be essentially a mixture of 3 grains of aspirin and 2 grains of magnesium carbonate. WJAZ, not so long since, was telling the radio world the marvels of that ingenious faker Professor Scholder, who professes to grow hair on bald heads, but who was unable to differentiate dyed twine from human hair. Over KTNT of Muscatine, Iowa, comes the story of the "Tangley Institute," which has a sure-fire cure for varicose veins, the invention, it appears, of one Dr. Charles L. Barewald of Davenport. WJBT of Chicago has described, via the ether, the marvels and virtues of the magic horse collar, the "I-on-a-co," of quack Wilshire. The Voice of Labor—WCFL—permits Dr. Percy Lemon Clark of Chicago, "a world authority on dietetics and food combinations," to broadcast health misinformation. Clark operates a "Health School" on "Sanatology" and tells the world that "acidosis and toxicosis are the two basic causes of all disease." Over this same station—WCFL—comes also the "Restoro," a base imitation of Wilshire's magic horse collar, and possessing as much therapeutic value as an empty tomato can with a string tied to it. Some day possibly the broadcasting business will grow up, and when that time arrives, it is to be hoped that it will have adopted a code of ethics at least as high as that of the average newspaper.

THE MEDICAL PROFESSION AND COSMETICS

Not long ago newspapers contained the announcement that the *American Druggist*, a trade journal devoted to the pharmaceutic industry since 1871, had been added to the series of publications owned and controlled by the International Publications, Inc., of which William Randolph Hearst is president. Almost coincident with this announcement, the policy of that periodical seems to have changed from that of one which aimed at—even if it did not always hit—scientific cooperation between the pharmaceutic industry and the medical profession to one devoted largely to attacking scientific medicine and the usefulness of the physician. The issue for November, 1927, contains a somewhat satiric comment concerning the medical profession by O. O. McIntyre, whose first name has been alleged to be "Oracular." It contains also an article by one Alice (Hyphen) Esther Garvin of New Haven, Conn., who, according to the editor, "thinks the doctor's idea is all wet." Apparently, Miss Garvin has suddenly developed the quaint notion that the American Medical Association is endeavoring to secure legislation which will make it necessary for druggists to sell cosmetic preparations only on prescription. This extravagant straw man the lady then devastates with ridicule. The American Medical Association is holding strictly to its policy of protection of the public in all matters related to health, asking only that the presence of dangerous ingredients in the few cosmetic preparations that contain them be so indicated as to give the public the opportunity of knowing what risks it may run in using them. Miss Garvin's article is full of ridiculous insinuations relative to the motives of the medical profession, of misstatements relative to medical organizations, and of warnings not justified by any actual evidence. Perhaps the *American Druggist* is trying to build circulation by sensationalism—a process not unknown in the other publications of William Randolph Hearst.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Personal.—Dr. Roland A. Davison, who recently resigned from the U. S. Army Medical Corps, has been appointed assistant medical director of the Desert Sanatorium at Tucson.

CALIFORNIA

Dr. Porter Assumes Duties of Dean.—It was announced, November 8, that Dr. Robert L. Porter, recently appointed dean of the University of California Medical School, had arrived in San Francisco to take up his new duties after spending three years in study in Rome. Dr. Porter, who visited medical schools in Italy, France, Great Britain, Canada and the United States, finds that everywhere the point of view of physicians is changing to the idea that they should strive to prevent sickness through periodic examinations, school hygiene programs and general hygienic training. He believes that the practice of medicine generally in the United States is ahead of the rest of the world, especially in the field of surgery, but that England is leading in the practical application of industrial medicine and public health and in the teaching of medicine, especially anatomy, in the larger schools. They have adapted the moving picture, he said, in the classroom with good results. European institutions generally, he found, lack up-to-date equipment and proper organization. During his study in Rome, Dr. Porter was chiefly interested in the study of scarlet fever and in translating works on that subject.

ILLINOIS

Society News.—A memorial paper to the late Dr. Joseph R. Hollowbush was presented to the Rock Island County Medical Society, November 8, by Dr. George L. Eyster. The society was addressed by Dr. Jacob Meyer of Chicago on "Nephritis," and by Dr. George D. Hauberg, Moline, on "Diabetic Coma."——During November five radio talks over Station WGN are being given under the auspices of the Illinois State Medical Society.

Chicago

Resignations and Suspensions at Speedway Hospital.—Col. Robin W. C. Francis, superintendent of the Speedway Veterans' Bureau Hospital in Maywood, announced, November 9, that he is resigning because of ill health. It is reported that Drs. Walter Rapaport and Arthur Lederer have also resigned from the staff of the hospital. The newspapers noted, November 15, that several physicians on the staff of the hospital had been suspended for ninety days without pay for their alleged connection with the sale of liquor prescriptions which has been under investigation.

Professor Compton Shares in Nobel Prize in Physics.—The Academy of Science, Stockholm, Sweden, November 10, awarded the Nobel prize in physics for 1927 jointly to Arthur Compton, Ph.D., professor of physics, University of Chicago, and to Prof. Charles Thompson Rees-Wilson, Cambridge, England. Professor Compton's research has been largely in the field of roentgen-ray and radio activity, and he was given the award for discovering the so-called Compton process.

Professor Compton is a member of the Council on Physical Therapy of the American Medical Association. He arrived in Chicago a few days ago from Europe, where he has been for about a year.

Personal.—Dr. Nathan P. Colwell, secretary of the Council on Medical Education and Hospitals of the American Medical Association, addressed a staff meeting of the St. Vincent's Hospital, Toledo, Ohio, September 29, at a dinner, on advances in the education of interns.——Dr. Gustavus M. Blech has been reappointed colonel in the medical officers' reserve corps of the army.——Dr. Earle H. Thomas was elected president of the American Society of Oral Surgeons and Exodontists at the annual meeting, recently, in Detroit, and Elmer C. Hume, D.D.S., Louisville, Ky., was made president-elect.——Dr. Sven Ingvar, docent in neurology, University of Lund, Sweden, lectured, November 16-17, at the University of Chicago Clinic, under the joint auspices of the Institute of Medicine of Chicago and the department of neurology of the university on "The Cerebellum: Anatomic and Clinical Studies."——H. E. Barnard, Ph.D., has resigned as president of the American Institute of Baking.

Society News.—The Chicago Pediatric Society met at the Children's Memorial Hospital, 715 Fullerton Avenue, November 15, where the members of the staff conducted a clinical program.——Dr. Carl H. Davis, Milwaukee, gave a motion picture demonstration before the Chicago Gynecological Society at 50 East Erie Street, November 18, on "Management of Labor," and Dr. Jacob L. Bubis, Cleveland, read a paper on "Gyneplastic Repairs of Old Lacerations Following Childbirth."——A dinner was given by members of the Chicago Medical Society at the Stevens Hotel, November 16, in honor of Dr. Hugh Cabot, dean, University of Michigan Medical School, Ann Arbor, preceding his address before the society; Dr. Cabot in the afternoon addressed the Medical History Society at the University of Illinois College of Medicine.——Dr. Julius H. Hess addressed the Chicago Tuberculosis Society, November 17, on "Some Phases of Tuberculosis Work Seen in Scandinavia"; Dr. Benjamin Goldberg, "The Changing Picture in Childhood Tuberculosis," and Dr. Simon L. Berman, "Tuberculin Diagnosis with Special Reference to Pirquet."——Among others, Dr. Alfred P. Solomon addressed the Chicago Neurological Society, November 17, on "Case of Periodic Somnolence: Report of Study and a Major Operation Under Hypnosis."——Among others, Drs. Edmund Andrews and William A. Thomas will address the Chicago Society of Internal Medicine, City Club, November 28, on "Mechanism of Nephritis."

KANSAS

Personal.—Dr. Charles S. Huffman, Columbus, was elected president of the Frisco Railroad System Medical Society at the annual convention, Fort Worth, Texas, in October.——Dr. John G. Swails, Wathena, has been appointed health officer of Doniphan County to succeed Dr. James T. Matthews, who has moved from the state.——Dr. James A. Milligan, Garnett, was elected president of the Santa Fe Medical and Surgical Society at the thirtieth annual meeting in Topeka, November 1.

Society News.—The president of the Franklin County Medical Society, Dr. George W. Davis, Ottawa, announced that October 1, 8 and 15 would be given over by members to the free immunization of children against diphtheria at about ten school houses in the county. The children were required to present a permit from their parents, and the serum was furnished by the state. Last year, 1,085 children in the county were immunized against diphtheria.——Among others, Dr. Frank L. Abbey, Newton, addressed the Sedgwick County Medical Society, September 20, on "Infantile Diarrhea."

Posed as Doctor for Eleven Years—License Revoked.—The board of medical registration and examination of Kansas revoked the license to practice medicine and surgery of James Benjamin Little, October 11, on charges alleging fraud in securing a license. It appears in the complaint that one James Benjamin Little was granted a license in Kansas in 1916 through reciprocity with Missouri, which had issued a license to James Benjamin Little in 1890. The Kansas board complained that the person to whom it granted a license is another and different person than the James Benjamin Little who was licensed in Missouri. The Kansas-licensed Little never had a medical education of any kind whatever, the complaint avers, never received a diploma, and never was licensed by the state of Missouri. He is sometimes known by the name of Marion Little. According to the Kansas board, the real James Benjamin Little is now practicing medicine at Norwood in Wright County, Missouri.

KENTUCKY

Personal.—Dr. James M. Salmon, Ashland, Ky., was elected president of the Central Tri-State Medical Society at the recent meeting in Huntington, W. Va.——The twenty-fifth anniversary in the practice of medicine of Dr. Joseph Gant Gaither, Hopkinsville, was celebrated recently, at a banquet given by members of the Christian County Medical Society.——Dr. Oliver H. Pinney, Mount Sterling, has been appointed to the staff of the experiment station at Lexington as assistant bacteriologist.

Society News.—Dr. Edward C. McGehee addressed the Boyd County Medical Society, Ventura, October 11, on early symptoms and treatment of tuberculosis.——At the fifty-seventh semiannual meeting of the Southwestern Kentucky Medical Association, Fulton, October 25, under the presidency of Dr. Oliver R. Kidd, Paducah, Dr. William J. Shelton, Mayfield, among others, read a paper on "Quartz Light Therapy in General Practice"; Dr. Horace T. Rivers, Paducah, "Uterine Hemorrhage Near the Menopause," and Dr. Edward B. Willingham, Paducah, "Functional Diseases of the Heart."

Birth Rate Decreased; Death Rate Increased in 1926.—The recent report of the bureau of vital statistics of the state board of health for the year 1926 indicates that the birth rate for Kentucky was 24.6 per thousand of population, which was less than for the year 1925. A special survey was made following an apparent lowering of the birth rate to determine whether an actual reduction in the number of births occurred and this fact was confirmed. The total number of births reported by licensed physicians was 50,269, and by midwives and others, 10,800. The death rate, estimated on a midyear population of 2,524,000, was 12.1, an increase of 7 per cent over the death rate for 1925. The death rate among the white population was 10.9 and among the colored population, 21.2. The infant mortality rate per thousand of live births was 74.5 as compared with 70.5 for the previous year. The number of deaths from pellagra increased from seventy-five in 1925 to 141 in 1926, and these reports came from all sections of the state, but principally from the rural districts.

MASSACHUSETTS

Physicians' Art Exhibit.—All physicians who intend to contribute works of their own art to the exhibition to be held at the Boston Medical Library, beginning November 30, should notify the committee promptly, giving the number of articles and a brief description and sending the objects themselves insured and prepaid to the Boston Medical Library between November 20 and November 26. It is desired that pictures intended for exhibition be framed, if possible, before being sent to the library. A small fee will be charged each exhibitor to help defray the expenses.

License Suspended.—The Board of Registration in Medicine of Massachusetts suspended the registration of Dr. Andreas F. Christian, October 27, because of gross misconduct in the practice of his profession and violation of laws relating to the use of alcohol. The board found, the *Boston Medical and Surgical Journal* says, that Dr. Christian had prescribed more alcohol for patients in a given time than is used in some of the largest hospitals in Boston. He has maintained "showy rooms" with various kinds of electrical apparatus, and the board received complaints several times alleging unethical conduct. Christian was registered before the state required graduation from a medical school as a prerequisite.

MICHIGAN

Postgraduate Conferences.—The state medical society arranged four postgraduate conferences during the month of October at Shelby, Marquette, Alpena and Saginaw. The conferences were opened by remarks of the councilor of the district, and comprised papers and demonstrations by speakers from Lansing, Grand Rapids, Muskegon, Battle Creek, Flint and Detroit. The conference at Marquette was also addressed by Dr. Budd C. Corbus, Chicago, on "Diathermy in Urology" and "Infections of the Kidney."

Personal.—Dr. John D. Monroe, Pontiac, has been appointed director of the newly authorized Oakland County Department of Health.——Dr. Gotthelf Carl Huber, for many years professor of anatomy and director of the anatomic laboratories, University of Michigan Medical School, Ann Arbor, has been made dean of the graduate school of the university, succeeding the late Prof. Alfred H. Lloyd.——Henry J. Vaughan, D.P.H., commissioner of health of Detroit, gave one of the DeLamar lectures in hygiene at the Johns Hop-

kins University School of Hygiene and Public Health, Baltimore, November 15, on "Municipal Health Administration."

Society News.—The guests of honor at the annual meeting of the Monroe County Medical Society, Dundee, October 26, were two of the original founders of the society, Drs. George B. McCallum and Lewis C. Knapp, both of Monroe.——Dr. Frank S. Perkin, Detroit, addressed the Lenawee County Medical Society, November 3, at Tecumseh, on "Diagnosis and Treatment of Thyrotoxicosis."——Dr. Plinn J. Morse, Detroit, addressed the Detroit Oto-Laryngological Society, November 16, on "Angina Agranulocytotica."——Dr. Stanley W. Insley, Jr., read a paper on "Advances in Treatment of Hay-Fever" before the West Side Physicians' Association, Detroit, November 17.

Second Annual Clinic at Highland Park.—The second annual clinic of the Highland Park Physicians' Club will be given, December 1, at the Highland Park General Hospital where a luncheon and dinner will be served. The clinicians and the speakers will be Dr. Hugh Cabot, dean and professor of surgery, University of Michigan Medical School, Ann Arbor, who will give a clinic on urology; Dr. Frederick N. G. Starr, Toronto, a clinic on cancer of the stomach; Dr. Kenneth D. Blackfan, Boston, clinic and the medical aspect of poliomyelitis; Dr. Edwin W. Ryerson, Chicago, clinic and the surgical aspect of poliomyelitis; Dr. Joseph B. De Lee, Chicago, a clinic on obstetrics; Dr. George E. Wilson, Toronto, a clinic on fractures; Dr. Jacob J. Singer, St. Louis, a clinic on tuberculosis, and Dr. Millard F. Arbuckle, St. Louis, a talk on "The Relationship of Otolaryngology to General Practice." The clinics will start at 9 a. m. and end at 10:30 p. m.

MONTANA

Notes from Health Report.—The report of the health officer of the city of Great Falls and Cascade County for 1926, recently received, indicates there had been no deaths from diphtheria in the county for about twenty-one months; 66.5 per cent of the school children at that time had been immunized by means of toxin-antitoxin. A similar low record of deaths in the county from diphtheria has not existed since 1900, when the first records become available. During 1926, the children in practically every school in the county were given physical examinations by the health officer. These examinations were not compulsory, but very few parents objected. The results were mailed to the parents, who were advised to consult their family physician or dentist concerning the correction of the defects; as far as possible, when indicated, the county nurse called at the home and explained to the parents the nature of the defects. The splendid cooperation of the local physicians made it possible to have many defects corrected in children whose parents were unable to pay for their services. A publicity campaign in goiter prevention was carried on through newspapers, letters, lectures, posters and pamphlets. Iodized table salt was recommended as the method of using iodine; its employment, of course, was entirely voluntary. About six months after the beginning of the campaign, a poll taken among the schools showed that about 68 per cent of the families represented in the schools were using iodized salt. Examination of the children at a later period showed a marked improvement in the goiter situation; however, the exact figures for the year 1926-1927 were not available at the time of this report. The percentage of children with goiter during the year 1925-1926 was said to have been 37.7. The consumption of milk in Great Falls averaged less than 1 pint per person during the year; about 14 per cent of the total supply was pasteurized; the remainder was raw. Cows were tested annually, and those reacting for tuberculosis were destroyed. No epidemics were traced to any milk supply during the year. The average number of bacteria per cubic centimeter of milk for all dairies was 26,776. The death rate for this community, including only residents of the county, was 8.45; the birth rate was 22.26.

NEBRASKA

Society News.—Dr. Miles J. Breuer read a paper on "Child Nutrition Work in the Lincoln Public Schools" before the Lancaster County Medical Society, October 4.——The Harlan and Furnas county medical societies held a joint meeting, recently, to discuss the outbreak of infantile paralysis in Harlan County. The meeting closed with a banquet at the Burlington Hotel.——At the Ninth Councilor District Medical Society meeting, Grand Island, October 11, among others, Dr. Herschel B. Morton, Doniphan, read a paper on "Diabetes in Children," and Drs. Lester M. Stearns and Royal F. Jester, Kearney, read a paper on "Bronchoscopy"; Dr. James E. M. Thompson, Lincoln, exhibited motion pictures and gave a lecture on "European Travels to Medical Centers."

NEVADA

State Medical Election.—At the annual meeting of the Nevada State Medical Association, Reno, September 23-24, Dr. William M. Edwards, Yerington, was elected president; Drs. George R. Smith of the Nevada State Hospital and George W. Green, Ely, vice presidents; Dr. Horace J. Brown, Reno, secretary-treasurer, and Dr. Robert P. Roantree, Elko, trustee.

NEW YORK

District Medical Meetings.—One hundred and twenty physicians attended the twenty-second annual meeting of the Eighth District Branch Medical Society at Warsaw, October 6. The president of the Medical Society of the State of New York, Dr. James E. Sadlier, and the vice speaker of the house of delegates, Dr. John A. Card, Poughkeepsie, spoke on the state society. Dr. Card remarked that more than 2,000 physicians had laid themselves liable to a penalty by failure to register in 1926 in accordance with the recent state law requiring the annual registration of physicians with the state department of education. Dr. Edgar W. Phillips, Rochester, gave an address on "Surgical Aids in the Treatment of Pulmonary Tuberculosis" illustrated with lantern slides; Dr. Charles Ward Crampton, New York, read a paper on "Proper Examination of Apparently Healthy Persons"; Dr. Robert H. Halsey, New York, "New Problems in Heart Disease." Dr. Thomas J. Walsh, Buffalo, was elected president of the district branch for two years. At the close of the meeting, Dr. Harry R. Trick, president-elect of the state medical society, delivered the dedicatory address of the George L. Skiff Memorial Laboratory.——The Fourth District of the Medical Society of the State of New York held its twenty-first annual meeting, October 11-12, in Schenectady. This district comprises the northeastern section of the state, including the Adirondack region. In addition to members of the state medical society, Dr. James J. York and Frank Vander Bogart, both of Schenectady, and Alton Goldbloom, Montreal, gave a pediatric clinic at the Ellis Hospital. "Fracture Cases" was the subject of Dr. Charles G. McMullen, Charles W. Woodall, both of Schenectady, and Philip D. Wilson, Boston. The evening meeting at the Mohawk Golf Club was featured by a dinner by the Schenectady County Medical Society and by a demonstration of "making sound visible and light audible" by a representative of the General Electric Company. Among other speakers on Wednesday was Dr. Ira S. Wile, New York, whose subject was "Physicians and the Intelligence Test."

New York City

Birth Rate Drops Faster Than Death Rate.—The health commissioner, Dr. Louis I. Harris, announced, November 7, that within the last fifteen years there had been a decline of 20 per cent in the birth rate of New York City, while the death rate in that period has decreased only 18 per cent. Last year there were 125,515 births in the city and the rate was 21 per thousand population; fifteen years ago the birth rate was 28 per thousand.

Society News.—The recently organized New York Association of Diagnostic Laboratories met at the Hotel Commodore, October 20; Dr. Alfred M. Hellman, representing the New York County Medical Society; Dr. Jacob Diner, Fordham University, and Dr. Anna I. Von Sholly, representing the New York City Health Department, gave addresses (THE JOURNAL, November 5, p. 1613).——Dr. Robert F. Barber, Brooklyn, addressed the Kings County Medical Society, November 18, on "Vascular Diseases of the Lower Extremities."

Discussion of Demonstrations.—At the next New York Health Conference, Feb. 23-24, 1928, an entire day is to be devoted to round-table conferences on questions arising from the New York health demonstrations, which are being financed in part by the Milbank Memorial Fund. This conference is an annual event under the auspices of the U. S. Public Health Service, the New York State Department of Health, the New York State Medical Society, the Milbank Memorial Fund, the State Charities Aid Association and the Bellevue-Yorkville Community Health Council.

Hospital News.—A ten day campaign opened, October 21, to raise $1,000,000 for a new building for St. John's Episcopal Hospital, Brooklyn, to be erected at Albany and Atlantic avenues on Herkimer Street.——The cornerstone of

the new $2,000,000 Bronx Hospital was laid, November 6, when a campaign to raise the remainder of the funds needed will begin.——The Russian Medical Society of New York, which is planning to create a million dollar building fund for a Russian hospital, sponsored a concert at the Hotel Plaza, October 22.——Dr. Joseph F. Roe has purchased the Steuben Sanatorium at Hornell.

Personal.—Gustav Alexander, professor of otology, University of Vienna, delivered a series of lectures at the Flower Hospital beginning Wednesday evening, November 9, on the histopathology of the ear and otoneurology.——Dr. Oswald S. Lowsley addressed the Canal Zone Medical Society, September 15, on "Diagnosis and Treatment in Urologic Surgery."——Dr. Arthur M. Master has been appointed attending cardiologist at the Veterans' Hospital number 81, Kingsbridge Road, succeeding Dr. Leslie T. Gager, resigned.——Prof. G. Franchini, University of Bologna, Italy, addressed the Brooklyn Urological Society, November 14, on "Amebic Cystitis."——Dr. Ralph Almour has been appointed adjunct professor of otology at the New York Polyclinic Medical School and Hospital.

Lectures for General Practitioners.—The New York Academy of Medicine announces a second series of lectures for the general practitioner, to be held Friday at 4 o'clock. The profession generally is invited. November 25, Dr. Benjamin P. Watson, professor of obstetrics and gynecology, Columbia University College of Physicians and Surgeons, will lecture on "Post Abortal and Puerperal Infections"; December 2, Dr. Chevalier Jackson, professor of bronchoscopy and esophagoscopy, Jefferson Medical College, Philadelphia, "Bronchoscopy: Lung Abscess from Foreign Bodies"; December 9, Dr. Thomas J. Harris, New York Post-Graduate Medical School and Hospital, "Acute Disease of the Accessory Sinuses and Its Treatment"; December 16, Dr. Howard S. Jeck, Bellevue Hospital, "Present-Day Treatment of Gonorrhea in the Male"; December 23, Dr. William H. Haskin, Manhattan Eye, Ear, Nose and Throat Hospital, "Responsibility of the Doctor in the Development of Teeth and Dental Infections." The lectures will continue until April 27.

Welfare Agencies to Study Themselves.—During the next year, the 1,200 health, welfare and other social agencies of New York will subject themselves to a rigorous study of their sources of income and expenditure, their programs of activities and field of service and the need of the city for social service. The study will be made by the research bureau of the welfare council and, it is said, will assemble and analyze facts never before available. The study will include an inventory of the health promotion and medical service resources of New York; a city-wide census of the chronically ill, and the study of the social needs of this portion of the city population. The president of the council says that this study will develop a system of measuring the effectiveness of social work and will prepare a guide making it possible to learn quickly where to secure statistical data that have been published concerning life, death, health education, recreation, relief and other facts involving the public welfare.

OHIO

Health at Cincinnati.—Telegraphic reports to the U. S. Department of Commerce from sixty-seven cities with a total population of about 30 million, for the week ending November 5, indicate that the highest mortality rate (18.6) was for Cincinnati, and that the mortality rate for the group of cities as a whole was 11.9. The mortality rate for Cincinnati for the corresponding week last year was 16.2, and for the group of cities, 11.8.

Personal.—Dr. Homer M. Austin has been appointed chief of the bureau of tuberculosis of the state department of health. Dr. Austin, who practiced medicine in Iowa for several years, was formerly health officer of the city of Wellman.——Dr. William W. Alderdyce, Toledo, has presented a full set of bound volumes of *Archives of Internal Medicine* to the Toledo Academy of Medicine; Dr. Edwin D. Tucker has donated 100 volumes to the library; Dr. William G. Gardiner, Jr., 200 medical journals; the widow of the late Dr. Charles A. Stephens, 150 volumes, and the widow of the late Dr. William G. Dice, her husband's library. The painting of the late Dr. W. W. Jones, one of the pioneers of organized medicine in Toledo, has been presented to the academy by his daughter, Dr. Grace Jones, Boonville, Mo.——Dr. Stephen A. Douglass, formerly superintendent of the state tuberculosis sanatorium at Mount Vernon and health commissioner of Olean, N. Y., has been appointed resident physician of the Franklin County Tuberculosis Sanatorium at a salary of $5,000, it is reported.——Dr. Raymond E. Bower, Chillicothe, has been appointed health commissioner of Ross County and the city of Chillicothe to succeed the late Dr. Gilbert E. Robbins.——Dr. Byron E. Neiswander, Kenton, has been appointed acting chief of the industrial hygiene department of the state department of public health.——Dr. Ralph B. Tate, for about eight years epidemiologist with the state department of health, has been appointed in charge of the bureau of communicable diseases of the health department of the city of Akron.

Society News.—The annual meeting of the Fifth Councilor District Medical Society was held in Cleveland, October 21, in cooperation with the Academy of Medicine of Cleveland. There were demonstrations and clinical talks at the Cleveland City Hospital in the afternoon. Among others, Dr. Leslie L. Bigelow, Columbus, president of the Ohio State Medical Association, held a surgical clinic. The afternoon session was a joint meeting with the academy at the Allen Memorial Library. Garnett Wright, lecturer in surgical pathology, Victoria University, Manchester, England, gave an address on "Surgical Treatment of Malignant Disease of the Colon with Special Reference to the Problems Peculiar to This Organ." Drs. Bigelow and George E. Follansbee spoke on "The Initiated Chiropractor Bill," which was up before the voters of the state, November 8. Drs. Harold N. Cole and John Rauschkolb read a paper on "Granuloma Inguinale."——The Ninth District Medical Society held its annual meeting at Ironton, October 20. Among others, Dr. Wayne Brehm, Columbus, discussed "Obstetrics in General Practice"; Dr. Frank C. Hodges, Huntington, W. Va., "Poliomyelitis." At the banquet, Dr. Edwin W. Mitchell, Cincinnati, gave an address on "Medicine—Yesterday and Today."——Drs. John Alexander and Frederick A. Coller, both of Ann Arbor, Mich., addressed the Toledo Academy of Medicine, November 5, on "Bronchiectasis, Pulmonary Abscess and Tuberculosis" and "Empyema," respectively.——Dr. Joseph A. Muenzer, Toledo, addressed the Putnam County Medical Society, Ottawa, recently, on "Endocrinology."——Dr. Walter C. Alvarez of the Mayo Clinic, Rochester, Minn., addressed the Summit County Medical Society, October 4, Akron, on the "Diagnosis of Gastro-Intestinal Troubles" with moving pictures.——Dr. Vernon C. Rowland, Cleveland, addressed the Trumbull County Medical Society, Warren, October 28, on "The Hemolytic Anemia of Pregnancy."——At the recent annual dinner of the Summit County Medical Society at the Akron City Club, Dr. Walter A. Hoyt gave an address in honor of past presidents of the society; Congressman Martin L. Davey gave an address; the physicians' orchestra supplied the music.——The Academy of Medicine of Cleveland has reduced its active dues from $35 to $30 for the year beginning December 1; in accordance with the constitution, the academy's dues are set annually by the board of directors within the limits presented by the constitution. Dr. Benjamin S. Kline addressed the academy, November 18, on "Pulmonary Abscess and Pulmonary Gangrene: Clinical and Pathologic Aspects," and Dr. John F. Erdmann, New York, on "Intestinal Obstruction."

PENNSYLVANIA

Disaster—Explosion at Pittsburgh.—A five million cubic feet gas storage tank exploded in the city of Pittsburgh, November 14. Twenty-one persons are known to have been killed, fifty other persons were still missing the following day, several hundred injured are being treated in Pittsburgh hospitals and scores of homes and factories were reduced to ruins. Most of the loss of property amounting to millions of dollars, the insurance companies announce, will have to be borne by the individual owners as the damage was mostly due to the explosion which was not covered in the fire insurance policies. The city council voted $100,000 and the Red Cross and the Salvation Army were promptly on the scene to help those in need.

Philadelphia

Personal.—Dr. John W. Croskey has been appointed consulting ophthalmologist to the Philadelphia General Hospital in recognition of his twenty-six years of service, an honor which has been bestowed heretofore on one other, Dr. George E. de Schweinitz.

Alvarenga Prize Offered.—The next award of the Alvarenga prize, offered by the College of Physicians of Philadelphia, will be made, July 14, 1928, provided an essay deemed worthy by the committee shall have been offered. The essays may be on any subject in medicine, but cannot have been published

and must be typewritten in English acceptable for publication. They must be sent in without signature but plainly marked with a motto and accompanied by a sealed envelope having on the outside the motto of the paper and within the name and address of the author. The prize will amount to about $300. Dr. Emil Bogen, Cincinnati, was awarded the Alvarenga prize for 1927 for his essay entitled "Drunkenness." Correspondence should be addressed to John H. Girvin, secretary, 19 South Twenty-Second Street, Philadelphia.

Society News—Obstetrical Night.—Dr. Paul Titus, Pittsburgh, will address the Philadelphia County Medical Society, November 23, on "Treatment of Toxemia of Pregnancy"; Dr. Norris W. Vaux, "Obstetrics as Seen by the Moving Picture Camera," and Dr. Ralph M. Tyson, "The Management of the New-Born Infant."——Prof. Gustav Alexander of the University of Vienna will address the Philadelphia Laryngological Society, December 6.——Among others, Dr. Williams B. Cadwalader gave a lantern slide demonstration before the Philadelphia Neurological Society, November 18, of a series of primate brains.——The program of the Philadelphia County Medical Society, November 9, comprised papers by Drs. Edward L. Bauer on infantile paralysis, John Claxton Gittings on pyonephritis in children, and Harry Lowenburg on pneumonia in children.——Dr. Charles H. Frazier addressed the Philadelphia Academy of Surgery, November 7, on "Colonic Anesthesia in Operations on the Brain and Spinal Cord."——Among others, Dr. Bennett A. Wight, New Orleans, addressed the Philadelphia Pediatric Society, November 8, on "Massive Atelectasis," and Dr. Paul M. Pegau, Woodbury, N. J., on "Suppurative Bronchitis."——Dr. Temple S. Fay, among others, read a paper before the Philadelphia Psychiatric Society on "A Mechanical Theory of Epilepsy and Influence on Cases Treated Along These Lines."

SOUTH CAROLINA

Society News.—At the September meeting of the Greenville County Medical Society at the Shrine Hospital, Greenville, the society voted that the secretary should collect $5 from every member for a donation to Dr. Samuel J. Taylor, who is permanently disabled; $145 was collected. It was further moved at this meeting that a committee of five go before the city council and request payment of Dr. Taylor's hospital bill, and in the meanwhile inform the superintendent of the city hospital that the county medical society would stand good for the bill, should the request be refused by the city council.——The Ridge Medical Society was entertained by the auxiliary at the home of Dr. and Mrs. Walter Hal Shealy, Leesville, recently.——Dr. George L. Dickson, Manning, was elected president of the Seventh District Medical Society at the recent meeting in Bishopville; the women of the city entertained the members at dinner in the chamber of commerce hall; among the speakers were Dr. Pinkney V. Mikell, Columbia, on "Preoperative Precautions in Otolaryngology," and Dr. Kenneth M. Lynch, Charleston, on "Practical Pathologic Considerations of Tuberculosis."——The Fourth District Medical Society held its twenty-first annual meeting, October 4, in Greer. Among others, Dr. Frank H. Richardson, Black Mountain, N. C., gave an address on infant feeding. Other guests were Dr. James Adams Hayne, Columbia, and Dr. Allen J. Jervey, Tryon, N. C.; 103 physicians were present. Dr. William Thomas Brockman, Greer, was elected president for the ensuing year.——Dr. Dougal Bissell, New York, will give the Sims Memorial Address on "Gynecology," November 22, before the Medical Society of South Carolina. The society was addressed, October 11, by Dr. George M. Mood, Charleston, on "A Survey of Focal Infections." The committee on Ross estate turned over to the board of finance, October 3, a check for $8,170.20, which was a partial payment on the principal of the residuary estate under the terms of the will of Miss Mary Jane Ross. The board will invest this amount to the credit of the "Ross-Henry Memorial Fund" in accordance with the will.

WEST VIRGINIA

Hospital Rates for Compensation Cases Increased.—The workman's compensation commission of West Virginia has just announced a substantial increase in hospital ward rates per day for compensation cases, together with a new fee schedule for fractures and injuries to the eye. The new rates are more favorable to physicians and hospitals of West Virginia than were the fees formerly in force. Their adoption was brought about through the efforts of the workman's compensation committee of the West Virginia State Medical Association.

Society News.—Dr. Robert R. Stuart, Bluefield, read a paper before the Mercer County Medical Society, September 28, on "Acute Poliomyelitis," and Dr. Eldon A. Amick, Bluefield, on "The Pathology of Poliomyelitis."——Dr. Robert C. Hood, Clarksburg, read a paper before the Marion County Medical Society, September 27, at Fairmont, on infantile paralysis.——Dr. Morgan T. Morrison, Sutton, was elected president of the Central West Virginia Medical Society, October 12, succeeding Dr. Charles Fred Fisher, Richwood. Among others, Dr. James A. Rusmisell, Buckhannon, discussed "Machinations of Miners' Hospitals, Their Uses and Abuses."——The Kanawha County Medical Society held a symposium on infantile paralysis, October 11; the speakers were Drs. J. Ross Hunter, Walton S. Shepherd, Earl B. Henson, and David Littlejohn, all of Charleston.——The committee on scientific work of the West Virginia State Medical Association at a meeting in Huntington, September 29, considered that the last program of the state society, rendered at White Sulphur Springs, was too long. In an attempt to shorten the program, it was decided that no physician who read a paper last year should appear on the program of the 1928 meeting.

GENERAL

National Honorary Public Health Society.—At a meeting, October 19, Charles-Edward A. Winslow, Anna M. R. Lauder professor of public health, Yale University School of Medicine, New Haven, Conn., was elected president of Delta Omega, a national honorary public health society; Major Edgar E. Hume, U. S. Army, vice president, and James A. Tobey, Dr.P.H., New York, secretary. Chapters of the society have been established at the Johns Hopkins University School of Hygiene and Public Health, Harvard University School of Public Health, the National Institute of Technology, Yale University School of Medicine, the University of Michigan and the University of California.

Mr. Martz Specializes in Selling Coats to Doctors.—A representative of the Chambersburg (Pa.) Woolen Mills, Inc., writes that Mr. H. L. Martz is making a "specialty of selling the doctors" an overcoat or suit, getting a deposit and promising to deliver the suit in from thirty to sixty days. Martz does not send in these orders, and the doctors write the Chambersburg Woolen Mills about them. By that time Martz has had a start of about thirty days, and thus far it has been difficult to locate him. Martz worked for the Chambersburg Woolen Mills for a short time in May and was discharged with some of their samples in his possession. He has been working thus far through Pennsylvania, Virginia, West Virginia and Ohio.

Resolution Favors New Building for Surgeon General's Library.—At the last annual meeting of the American Gynecological Society, Hot Springs, Va., the improper housing of the surgeon general's library and the army medical museum in Washington, D. C., was brought up for discussion. It was the consensus that a movement should be started toward the erection of a suitable building for housing these valuable collections. A resolution was passed to the effect that the American Gynecological Society recommend to Congress the erection of a suitable building to house the surgeon general's library and the army medical museum in the central part of the city of Washington, preferably in the line of new public buildings now being erected on the border of Potomac Park. Copies of the resolution were sent to the speaker of the house of representatives, to the chairmen of the appropriation committees of both houses of Congress.

Radiological Society of North America.—The annual meeting of this society will be held in New Orleans, November 28-December 2, under the presidency of Dr. Edward W. Rowe, Lincoln, Neb., and with headquarters at the Hotel Roosevelt. Among the clinics given will be "Practical Phases, Technic and Interpretation of Bone and Joint Injuries," by Dr. Edward S. Blaine, Chicago; "Bone Tumors," Dr. Joseph C. Bloodgood, Baltimore; "Arthritis," Dr. Charles A. Waters, Baltimore; "Methods of Serial Roentgenography in the Diagnosis of Gastro-Intestinal Lesions," Dr. Lewis Gregory Cole, New York; "The Colon," Dr. James T. Case, Battle Creek, Mich.; "Cholecystography," Dr. Sherwood Moore, St. Louis; "Acute Nontuberculous Conditions in the Chest," Dr. Leroy Sante, St. Louis. The program comprises also many papers by men from various parts of the country on radiologic and other subjects. The foreign guests expected to be present are Drs. A. Lacassagne, Paris; Herman Holthusen, Hamburg; Franz M. Groedel, Bad-Nauheim, J. Forestier, Jr., Aix-les-Bains, France, and H. Behnken, Berlin. There will be a visit to the leper colony on Saturday.

International Union Against Tuberculosis.—The council and executive committee of the International Union Against Tuberculosis met, September 27-28, at Paris, France. There were delegates from ten countries; two new countries, Finland and Bulgaria, have joined the union, so that it includes a total of thirty-four countries. The first meeting was devoted to the organization of the sixth conference of the International Union Against Tuberculosis, which will be held in Rome, Sept. 25-27, 1928. As at previous international conferences, the scientific papers will be restricted to three questions: (1) biologic subject: filtrable elements of the tubercle virus; (2) clinical subject: diagnosis of infantile tuberculosis; (3) social subject: organization of tuberculosis prophylaxis in rural districts. The second meeting of the council was occupied by the report of Dr. Dumarest, chief physician to the Belligneux and Mangini sanatorium at Hauteville, on "Results of Phrenicectomy in the Treatment of Pulmonary Tuberculosis." The author considers that this method, although often disappointing, occasionally yields strikingly successful results. Dr. Dumarest applies this operation to carefully selected cases only. He demonstrated that the results are essentially dependent on the retractility of pathologic tissues. Lesions of the upper lobes may therefore derive as much benefit from phrenicectomy as lower lobe lesions. He has had, it is said, nearly 50 per cent of unquestionably beneficial results obtained by this method alone. The executive committee of the International Union Against Tuberculosis consists of Sir Robert Philip, Professor Paolucci, Professor Calmette, Dr. Harbitz, Dr. Dewez, Prof. Léon Bernard, Dr. F. Humbert, and M. A. Pallain, treasurer.

Cooperation in Rural Health Work.—In the year ending June 30, the U. S. Public Health Service cooperated in demonstration projects in rural health work in eighty-six counties or districts in eighteen states. Similar work has been done for the last six years, under the authorization of acts of 1883 and 1912 and of the annual appropriation acts. The local community pays at least half the expenses of the demonstration. Members of the working forces are appointed by the local authorities, but they must be acceptable to the cooperating agencies which includes also the state board of health. A plan has been evolved in the course of this experience which seems applicable to all rural districts in the United States. As yet, only about 17 per cent of the rural population is provided with local health service approaching adequacy under the direction of whole-time local health officers. In the report of this work by Dr. Leslie L. Lumsden in *Public Health Reports*, October 21, there are said to be about 1,000,000 persons incapacitated all the time by illness in the rural communities, much of which is preventable; about 70 per cent of the school children are handicapped by physical defects; about 30 per cent of persons of military age are incapacitated for hard productive labor or for general military duty, and more than 60 per cent of the men and women between 40 and 60 years of age are in serious need of physical rehabilitation largely as a result of preventable causes. Through this connection with the local health departments, the U. S. Public Health Service can best perform its duty in helping prevent the spread of infection in interstate traffic. The money expended by the Public Health Service in the last fiscal year was $70,471.52. With the increasing interest in rural health service, the demands for cooperation far exceed the money available to the U. S. Public Health Service for allottment. The communities in which this cooperative work was done were in Alabama, Arkansas, California, Georgia, Iowa, Kansas, Kentucky, Louisiana, Massachusetts, Missouri, Montana, New Mexico, North Carolina, Oklahoma, Tennessee, Virginia and West Virginia.

FOREIGN

Physicians in Latvia, Esthonia and Lithuania.—The U. S. consul at Riga, Latvia, has supplied information concerning physicians in that region. Latvia had, Jan. 1, 1926, a population of 1,857,004, and 988 registered medical practitioners. There was therefore one medical licensed practitioner to every 1,879 inhabitants. The population of Esthonia, Jan. 1, 1925, was 1,114,630, and the number of physicians, Jan. 1, 1927, 800, on which date there was one physician to every 1,633 inhabitants. The number of physicians in Lithuania, Jan. 1, 1927, was 465, and the population of the country, 2,255,520. In the city of Kovno there is one physician for 642 persons, while in the country districts the proportion is one physician to 6,375 inhabitants. According to the classification by nationalities, there is not one American physician practicing in Lithuania. There are in that country forty-eight hospitals exclusive of military hospitals, and there is one hospital bed to 923 inhabitants. There appear to be only eight private hospitals, while there are twenty-five municipal hospitals, eight government hospitals, six controlled by societies and one by the Red Cross. The demand for physicians in Latvia is sufficient to absorb 133 medical graduates annually. Foreigners and graduates from foreign institutions who do not hold diplomas from the Medical Faculty of the University of Latvia are able to obtain licenses to practice only with the greatest difficulty. Osteopaths are not recognized, and are not licensed to practice as such.

Status of Hospitals in China.—The *China Medical Journal*, in September, completed publication of articles intended to show the present position of hospitals in China brought about by the period of political disturbance and civil war. The greatest difficulty seems, thus far, to have been in Honan Province where, during the last year, four separate parties have striven for the mastery of the province. The mission hospitals have suffered more here than in any other province, and for practical purposes the whole of the work has been suspended. The writer apparently does not presume to have full and complete information concerning the whole of China. He states, however, that in seven provinces where the hospital situation was reviewed, sixteen hospitals have been closed and that of these twelve are in the province of Honan. Two of those closed were looted and destroyed. The total number of hospitals in these seven provinces was given as eighty-four, and of these forty-nine were running normally under permanent supervision. Another summary aims to show that a total of 163 hospitals were under the southern government and seventy under the northern government. Of the former, thirty-five were considered more or less normal; fifty-five had been closed, and four had been seized by military authorities. Of the seventy under the supervision of the northern government, forty-nine were considered more or less normal, seventeen were running under temporary arrangement, and four were closed.

Battalions of Soldiers with Trachoma.—Prof. Emile de Grosz, director, eye clinic number 1, Royal Hungarian University, Budapest, addressed the conference on public health in that city, October 24-27, on "The Campaign Against Trachoma." He said that trachoma is found in every county of present-day Hungary and that from the infected areas of the occupied territories of Hungary a great number of sick people arrive, now that communications have been restored. At the outbreak of the World War, leave of absence was granted to all soldiers who had trachoma, but they were later recalled and formed into separate regiments. After the war they returned home without observing preventive measures and thus gave rise to a new outbreak of the disease. Hungary has conducted a campaign against trachoma for many years. The expenses of the poor in connection with the campaign are defrayed by the treasury. Oculists have been sent out to the infected districts to arrange for treatment of the victims and to instruct the local physicians; eye hospitals have been founded and lectures on trachoma have been delivered to the public by competent professors. Professor Grosz considers that to ascertain the extent, at present, of trachoma in Hungary, it is necessary to collect new data; all school children must be examined as well as all cases of eye disease in factories, institutions, tenements and emigrants returning from America. Every single case must be reported, and on the basis of the data eye specialists should be appointed to examine certain districts. Competent specialists should carry on the treatment of outbreaks. The number of eye wards in the hospitals should be increased. The eye clinics, eye hospitals and eye wards should all unite in a great preventive movement. The directors of these institutions should visit the infected areas and get into the hospital patients who need treatment. In greatly contaminated districts trachoma schools must be opened. In some localities 10 per cent and more of the school children are said to suffer from trachoma. Professor Grosz urges also convening an international conference on trachoma to coordinate the measures of every country and to take steps to prevent the spread from one country to another.

Deaths in Other Countries

William Thelwall Thomas, professor of regional surgery and clinical lecturer in surgery, University of Liverpool, September 10, aged 62.——Major Gen. **Sir William G. MacPherson,** London, England, editor-in-chief of the British official Medical History of the War, and one of the most distinguished colonel commandants, October 15, aged 69.——Dr. **Alfred J. M. Paget,** formerly regius professor of physic, University of Cambridge, September 15.

Government Services

Promotions in the Navy

The following officers have been found qualified for promotion: Lieuts. Lea B. Sartin and Rex H. White; Lieuts. (j.g.) Charles H. Allman, John M. Bachulus, Edward M. Harris, Jr., Thomas H. Hayes, Joseph I. Porter, Harry D. Templeton and Leonard L. Wilson.

Army Personals

The resignation of Major Roland A. Davison, U. S. Army Medical Corps, has been accepted by the President.——Lieut. Douglas S. Kellogg, Letterman General Hospital, city of San Francisco, will sail about December 9 for duty in the Hawaiian department.——Major Edward T. B. Weidner has been relieved from duty at the Fitzsimons General Hospital, Denver, and ordered to report to the commander general, sixth corps area, Chicago, for duty in the general dispensary in that city.——Major Roy T. Morris, having been found incapacitated for active service on account of disability incident thereto, has been retired.——Major Robert B. Shackelford has been relieved from duty at the Walter Reed General Hospital and assigned to Camp Meade, Maryland.——Major Allen J. Black, Fort Andrew, Massachusetts, has been ordered to proceed to his home to await retirement at the convenience of the government.——Major A. Edward Sherman has been detailed, on completion of his present course of instruction at the school of aviation medicine in Texas, for duty with the Organized Reserves of the Ninth Corps Area with station at Clover Field, Calif.

Notice of Examination for Entrance to Army

The war department announces that an examination will be held, Jan. 16-28, 1928, at various places throughout the United States for the selection of applicants for appointment as first lieutenant, medical corps, U. S. Army. Applicants must be graduates of recognized medical schools and must meet certain other requirements. The annual pay of first lieutenants ranges from $2,696 to $3,152, and there are now twenty-four vacancies in this grade. Further information concerning the examination will be given by the adjutant general of the army, Washington, D. C.

U. S. Public Health Service

Surg. Grover A. Kempf has been detailed as a delegate to the fifth Pan American Child Congress, Havana, Cuba, December 7-14.——Asst. Surg. George D. Boone, Jr., has been relieved from duty at the flood district with station in New Orleans, and assigned to duty at marine hospital number 6, Cleveland.——Surg. Clayton K. Haskell (reserve) has been relieved from duty at Cleveland and assigned to duty at marine hospital number 70, New York.——Surg. John M. Lowrey (reserve) has been relieved from duty at Portland and assigned to duty at marine hospital number 82, Norfolk, Va.

Guests of Military Surgeons

At the thirty-fifth annual meeting of the Association of Military Surgeons of the United States, Carlisle Barracks, Pennsylvania, October 6-8, the president of the association, Major General Merritte W. Ireland of the U. S. Army, presided. Among the foreign guests were Major General Stanislaw Rouppert, surgeon general of Poland; Comdr. Edward Cecil Clements, royal air force medical service, Great Britain; Lieut. Col. José Izquierdo of the Mexican army; Lieut. Col. Bodhan Zaklinski, medical corps, Polish army; Major Ettore Micheletti, medical corps, Royal Italian navy; Surg. Major Ken Takeuchi, medical corps, Imperial Japanese army; Major Kemal Bey, medical corps, Turkish army; Capt. Luis Arias Schreiber, medical corps, Peruvian army, and Capt. Eduardo Ramirez y Melendez, medical corps, Cuban army. General Ireland pronounced this the most instructive meeting he had attended. The demonstrations were conducted mostly outdoors. The winner of the Wellcome prize of the association (THE JOURNAL, May 28, p. 1739) was Major Edward G. Huber, medical corps, U. S. Army. There was a barbecue, Thursday evening, at which two lambs, two pigs and two loins of beef were roasted on spits over coals. A banquet in honor of the visiting delegates was given Friday. Brig. Gen. William H. Wilmer, Baltimore, of the reserve corps, closed the banquet with a few felicitous remarks.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 29, 1927.

Adulteration of Food

Remarkable disclosures concerning adulteration of food are given in a ministry of health report. Out of 120,617 samples analyzed, no fewer than 7,044 were not up to the required standard. Discoveries made by the analysts included sand in flour, wood splinters in sweets, iron filings in tea, talc in rice and foreign fats in butter. Sponge cakes contained boric acid, and traces of this preservative were also in ice cream, meat, pie, fish paste, potted shrimps and sausages. Eight grains of iron filings to the pound and 12 per cent of dust were found in one lot of tea, while in another sample the tea dust contained 8 per cent of mineral matter. When a purchaser complained of gritty bread, it was found to contain 0.12 per cent of sand. Custard powders were adulterated with acid dyes. One case was reported of the use in chocolate rock of commercial burnt sienna containing an excessive quantity of arsenic.

The Prevention of Tuberculosis in Animals

At the annual congress of the National Veterinary Medical Association, Sir John McFadyean, director of the Research Institute, Royal Veterinary College, lectured on the prevention of tuberculosis in animals. He said that only an insignificant number of herds in England were free from tuberculosis. In spite of all inducements to owners to obtain licenses to sell milk from herds free from disease, only 271 had been issued, and there were 350,000 herds in the United Kingdom. The only way of keeping a herd free from disease was by never introducing an outside animal to the herd without trustworthy evidence that it was free from disease. State intervention had been tried, but all preventive measures in this country seemed to have made little headway. The reason, he thought, was that cattle owners did not see sufficient adequate recompense for the trouble and cost of freeing a herd from the disease. The loss sustained was not compensated for by the state. It is curious that when discussing tuberculosis in cattle, experts almost always ignore the radical cause—the artificial conditions in which milch cows are kept. They are too much confined to byres with insufficient air and light and are stall fed. Surely the remedying of these conditions is the most important measure for the prevention of tuberculosis in cattle.

Imperial Social Hygiene Congress

An imperial social hygiene congress has been held in London. It was organized by the British Social Hygiene Council and attended by delegates from government departments at home and abroad, the League of Nations Health Organization, British and Indian universities, local authorities in Great Britain, and medical and educational societies. A considerable portion of the time was devoted to a consideration of venereal diseases.

Col. L. W. Harrison, special medical officer for venereal diseases, ministry of health, dealt with the modern treatment of syphilis. He emphasized the importance of starting treatment before the serum reactions become positive. The minimum amount of treatment for a seronegative primary case is twenty injections, totaling from 10 to 12 Gm. of neoarsphenamine with mercury or with bismuth, and for seropositive primary and early secondary cases 50 per cent more. Administration of mercury or bismuth simultaneously with arsphenamine had advantages over that of following a course

of one by a course of the other, especially from the point of view of preventing neurorecurrences. Negative reactions in serum with positive in cerebrospinal fluid are so uncommon, and the inconvenience of lumbar puncture so great, that routine examination of the fluid may be omitted in cases in which the course of the disease is straightforward and satisfactory from the serologic point of view.

Dr. J. R. Kaye, health officer for the West Riding of Yorkshire, referred to the special administrative difficulties with regard to gonorrhea, especially in married women with whom the authorities found it difficult to get into touch. He advocated clinics open at any time of the day, and special facilities at child welfare centers, so that the women could attend with due regard to their household duties and without fear of neighbors' comments. There were persons totally indifferent to treatment; for them probably the only incentive might be the visualization of museum specimens showing the results of venereal diseases. The follow-up system had not been adequate, for 20 per cent or more had relinquished treatment prematurely. He advocated some means such as notification, and, if necessary, threatened publicity. Education was not alone for the infected. What was wanted was a racial conscience and a recognition that to keep fit was as much in the interest of the nation as of oneself. There was no reason why sex physiology should not be taught by a trained person to all pupils over 13 years of age.

Surgeon-Captain T. B. Shaw dealt with the incidence and prevention of venereal disease in the navy. He pointed out the steady drop in incidence in the navy up to 1915. Now, once again, after a rise stimulated by the war, the figure is falling to prewar level. The percentage rate of gonorrhea is increasing. Fifty years ago gonorrheal infections accounted for about half the total, but in 1924, 72 per cent of the cases entered on the sick list for venereal diseases were due to gonorrhea or its sequelae. This is largely owing to the fact that a specific treatment for gonorrhea has not as yet been evolved. Of the stations, China has the highest incidence of venereal disease, and the home station the lowest. Prevention includes education, local disinfection, early diagnosis and treatment, recreation and physical training, quarantine and restriction of leave. Physical training and adequate facilities for recreation have been recognized in the navy for many years as important weapons in the campaign. Every opportunity must be given for the healthy employment of the men, so that the important factors in the spread of venereal disease, idleness and alcohol, may, as far as possible, be eliminated. The outlook is extremely hopeful. Wonderful progress has been made since the war.

Thief's Esophageal Pouch

In a letter to the *Daily Mail*, Col. Aubrey O'Brien, C.B.E., a former magistrate in India, describes how the Indian thief creates a pocket in his throat to conceal articles of value. He uses a heavy circular weight of lead, attached to a string five inches long and knotted at the end. The lead may be an inch in diameter and nearly half an inch thick. This weight is lowered into the gullet and prevented from slipping by the knot at the end of the string, which is passed between two teeth of the lower jaw. The action is slow, but at the expense of much septic ulceration of the throat the rascal becomes the possessor of a pouch in the gullet. The pouch serves many purposes. Small articles of value, such as rings and precious stones, can be picked up and disposed of immediately with the certainty that no ordinary search, however instant or rigorous, will reveal anything. A thief was arrested with five sovereigns, which had been seized in his hand in the very act of theft. The village constable escorted him to the police station and handed him over to another man there to take to court. When the second constable prepared to take over the prisoner and the money, the sovereigns had disappeared from the desk on which they had been laid. Recriminations followed, each constable thinking that the other had the money. Fortunately there arrived a superintendent versed in the wiles of criminals. Suddenly he clapped his hand on the prisoner's throat. "Up they come, you rascal," was the order, and the five sovereigns were brought to light. The pouch is also of special value to prisoners for hiding little luxuries like opium.

New School of Biochemistry at Oxford

The school of biochemistry at Oxford was opened by the chancellor. The new school owes its existence to the Rockefeller trustees, who offered $275,000 to meet the cost of the building and its equipment, and $100,000 toward maintenance, on condition that the university contribute the sum of $125,000, or its equivalent in annual income, for maintenance. The chancellor said that though deeply attached to the classical side of the Oxford training, to which he owed so much, no one appreciated more the value of the scientific teaching which had grown so rapidly in Oxford and of which the Oxford scientists had so fine a record. Oxford had now for many years given its attention to science. Out of physiology gradually emerged a special branch, which was sometimes called chemical physiology and in later years biochemistry. This branch of science owed much in Oxford to Sir Charles Sherrington. By the generosity of Mr. Whitley, the Whitley chair of biochemistry was founded and it had been filled, first too briefly by Dr. Benjamin Moore, who nevertheless did admirable work, and since by Dr. R. A. Peters, whom they now congratulated on the greater sphere of work about to open before him.

Leprosy in Africa

At a meeting of the executive committee of the British Empire Leprosy Relief Association, consideration was given to the reports of the secretary, Mr. Frank Oldrieve, on his tour through Africa from Egypt to the Cape. The medical subcommittee had previously met and considered a memorandum prepared by Sir Leonard Rogers, surveying the present position. It showed that the lepers in our African colonies are estimated at 153,000, of whom Nigeria contributes some 90,000, and that at least an equal number must be added to get a true idea of the problem. Only about 5 per cent of the patients are segregated; many of these cases are burned-out, uninfective nerve cases, the isolation of which does nothing to reduce leprosy. The further information available confirmed the previous conclusion that it is not advisable to attempt the compulsory segregation of lepers in our tropical African colonies and that as many as possible of the early cases should be treated. The association is now in touch with sixty-two workers treating leprosy cases in clinics and settlements in Africa alone.

Hospital Reform

At present there are in this country three kinds of hospitals: the voluntary; the municipal, which are the infectious disease, fever and tuberculosis hospitals; and the poor-law hospitals. There are thousands of beds in poor-law institutions standing empty, and at the same time every voluntary hospital has a queue waiting for admission. Many people won't go into poor-law hospitals because of the stigma of pauperism. That would disappear if they became municipal hospitals. Mr. Chamberlain, the minister of health, therefore, proposes to reduce the kinds of hospitals to two, voluntary and municipal. He thinks that, having thus reduced the field for cooperation, it would not be difficult to form some joint body, embracing both the municipal and the voluntary hospitals, who should decide as to the need for extension, the direction in which extension is wanted, and the place where

the extension should be provided. Thus would be secured the future place of the voluntary hospital scheme of the area, and the existing hospital accommodation would be used to the utmost extent possible by the interchange both of patients and of hospital staffs. There would be three classes of patients: (1) Those too poor to contribute anything at all; they would be treated free. (2) Middle-class patients who cannot afford the highest fees; they would be asked to pay a stated fee while occupying a bed. (3) People who could afford the full fee and have their own specialist attend them.

PARIS

(From Our Regular Correspondent)

Oct. 26, 1927.

The Congress of Stomatology

The fifth Congress of Stomatology was opened, October 24, and its sessions continued through the whole week. The papers presented dealt with: the surgical extraction of teeth (Dr. Monier); mouth hygiene of the child at home and at school (Dr. Tellier); osteomyelitis of the lower jaw (Dr. Gornouec); the diagnosis and treatment of cancer of the mouth (Professor Roussy), and sterilization in stomatology. Numerous further communications were presented, the most interesting of which pertained to septicemias of dental origin, a question that engaged also the recent Congress of Internal Medicine.

The International Congress of Public Health

The International Congress of Public Health was held recently in Paris coincidently with the commemoration of the centenary of the foundation of the Société de médecine publique et d'hygiène sanitaire. Dr. Dujarric de la Rivière, the general secretary, in recounting the history of the society, enumerated the scientific discoveries in which its members had taken part, and eulogized the savants who had occupied the presidential chair. Prof. Léon Bernard, president of the congress, traced in his address the magnificent program that is being followed by hygienists. Professor Madsen of Copenhagen, president of the health section of the League of Nations, expressed the collective greetings of the foreign delegates. The minister responded, thanking the attendants for having chosen Paris as the place of meeting and calling the attention of the physicians to the new law pertaining to social insurance, which he had proposed, and expressing the hope that it would contribute to the advancement of public health. An official visit was then paid to the exhibit held in connection with the congress.

The first question considered was the relation of social insurance to public health. The papers had been prepared by MM. Kuhn of Copenhagen; Holtzmann, general health inspector of Alsace-Lorraine, and Briau, member of the superior council on health in France. They conformed with the conceptions of the minister, but were less pleasing to the physicians, whose hostility to the social insurance project is well known. Dr. Dequidt, general inspector of the administrative services, showed himself somewhat less optimistic. Dr. Ott, inspector of the hygienic services of the department of the Lower Seine, spoke of the financial aspects of the social insurance project. Professor Madsen gave an address on the international organization of hygiene. Prof. George Nuttall, professor of biology at the University of Cambridge, discussed the relations of parasitology to hygiene.

The second main topic was: "The Factors in the Recrudescence of Smallpox and the Means of Combating Them." The subject was introduced by Professor Jitta, director of public health of the Netherlands; Dr. Ricardo Jorge, general director of the public health service in Portugal, and Dr. Camus, director of the Institut supérieur de vaccine of the Academy of Medicine of Paris. Dr. Ichok, professor at the Ecole des hautes études sociales, spoke of the rôle of social factors in the dissemination of smallpox; Dr. Montagnol, director of the Bureau d'hygiène of Orléans, dealt with smallpox prophylaxis. Dr. Messerli, head of the public health service of Lausanne, discussed the recent epidemics of smallpox in Switzerland, their causes and their prophylaxis. Madame Dr. Panayotatou gave an account of smallpox in Egypt. General Medical Inspector Savornin read a paper on health work in the military instruction camps. Bellile, chief physician, of the first class, in the marine service, described the prophylaxis of malaria on board warships.

A number of educational films were presented at the congress: one on antituberculosis vaccination with Calmette's B C G vaccine; another on the organization of the antivenereal crusade in France. A number of field trips were organized. At a special meeting, an international federation of health societies and associations, syndicates and groups of hygienists was created. The president of the republic held a reception in the Palais de l'Elysée.

The Centenary of Berthelot

Ceremonies have been held in commemoration of the centenary of the chemist Berthelot. The exercises began at the Pantheon, where he and his wife lie buried; shifted to the Sorbonne, and were continued in the institutions in which Berthelot taught: the Collège de France and the Faculté de pharmacie. At the latter institution, the dean, Dr. Radais, exhibited to the visitors the rudimentary apparatus with which Berthelot made his first discoveries and which have since been piously preserved. At the Collège de France, Mr. Marston T. Bogert, delegate from the United States, delivered an address, in which he referred to Berthelot's genius, which had extended so many boundaries of knowledge. The corner stone of the Maison de la chimie, which is to be erected in memory of the great chemist by subscriptions solicited throughout the world, was laid at a fitting ceremony. More than $640,000 has been contributed to the fund, but the subscription list is still open for further contributions.

Occupational Allowances Accorded to Military Physicians

The minister of war has issued a ruling that pecuniary allowances, not to exceed 250 francs a year, will be accorded to physicians of the army medical corps to cover personal expenses.

The Taxes on Physicians' Automobiles

The automobile tax is very high in France. There are two forms of the tax: one tax is levied on vehicles that are kept as a luxury, and one half the amount on automobiles that are needed in the practice of a trade or profession. The automobiles of physicians are placed in the second group. But if a physician owned two automobiles, only one could be classed as for professional use, the other being listed as "voiture de luxe." As a result of numerous complaints, the minister has recently made a ruling that two vehicles belonging to a physician may be regarded as for professional use and hence subject to the lower tax, provided the physician shall establish that the second automobile is in reality an emergency car that he uses when the first is out of repair.

Another Physician the Victim of His Devotion to His Profession

Dr. Harburger, chief physician of the clinic connected with the Hôpital Lariboisière in Paris, has succumbed to septicemia, aggravated by tetanic complications, caused by pricking a finger while operating on an infected wound. The minister of hygiene bestowed on him as a posthumous distinction the gold medal awarded for distinguished service in epidemics, and accompanied the decoration, which was placed on his coffin, with the words "the gift of the nation." Special mention of his death was made in the *Journal officiel*.

GENEVA

(From Our Regular Correspondent)

Oct. 20, 1927.

Health Report

The report of the federal service of public hygiene for 1926 has just been issued. The epidemic of smallpox which began in 1921 has ended, but on account of its tenacity and extension it was without example in the history of smallpox in Switzerland since Jenner's discovery. For several years it was a danger to the country regardless of its mild character. In spite of the opposition to vaccination in certain parts of Switzerland and although it is not compulsory in ordinary times in most cantons, the measures imposed by the law of April 23, 1923, resulted in the majority of the population being vaccinated. This is the best guarantee against the return of an epidemic. Diphtheria has decreased for the last few years. In 1925 the number of cases was 2,617; in 1926 there were 1,930, and in 1920 there were 7,702 cases reported. This decrease is not merely apparent, for the number of cases submitted for bacteriologic examination has not varied greatly for several years. It is hoped that this disease, which formerly wrought such havoc among children, will lose its importance by the increasing use of immunizing methods. Certain transmissible diseases of the central nervous system are less prevalent: figures for epidemic encephalitis were sixty-nine cases in 1925 and thirty-six in 1926; for epidemic cerebrospinal meningitis, thirty-one cases in 1925 and twenty-eight in 1926. There has been a slight increase in poliomyelitis: ninety-three cases in 1925 and ninety-six cases in 1926. The number of reported cases of typhoid reached 328 in 1926. This is an increase over the years 1924 (259 cases) and 1925 (300 cases). Yet this increase is entirely due to an epidemic occurring in a hospital for the insane and therefore has no relation to the general sanitary condition of the country. Without this epidemic the number of reported cases would not have been greater than in 1924 and 1925, which corresponds to a morbidity of 7 cases per hundred thousand inhabitants, a percentage which has apparently never been reached in any other country. The number of cases of measles has increased. In some localities the disease appears to have assumed a severer character than in former years, a fact observed in the past few years in other countries. The number of reported cases of scarlet fever increased from 1,980 in 1925 to 2,387 in 1926. The canton of Berne, with 757 cases, was especially attacked. Although the disease has thus far not presented any serious gravity, it would seem, on the other hand, to be more tenacious in those regions where it has appeared. Only two instances of epidemic dysentery have been reported. The federal government has provided sufficient money to insure control of this disease. The number of cases of trachoma is again increasing. There were sixteen in 1925 and twenty-one in 1926. In most instances the patients were foreigners; however, some cases of this disease occurred in subjects who had never been out of Switzerland. Although until now the disease has remained sporadic, the fact that there is a tendency for the cases to become more numerous has caused the authorities to act vigorously. Puerperal fever, which reflects the progress realized in the domain of prophylaxis of pregnancy, has continued to become less frequent. In the report of 1925, thirty cases were recorded; there were twenty-six in 1926. In the report for 1925 there were three cases of leprosy in the isolation wards of the hospital at Brigue. Two of the patients have since died from pneumonia.

Toward the end of 1926, Switzerland was again invaded by a wave of influenza which, although not presenting the severity of the epidemics of 1918 and 1920, gave rise to some uneasiness. During the last two weeks of the year, no less than 15,013 cases were reported and these probably represent only a portion of those afflicted. Two or three months after its onset, the epidemic could be considered as practically extinguished. Exotic diseases—cholera, plague and typhus fever—were not encountered in 1926.

Supervision of Frontiers

The supervision of the Swiss frontiers, made necessary by the sanitary situation of a part of Europe a few years ago, has been simplified by improvement in this situation. The sanitary stations have been abolished excepting those at Brigue and Buchs, while supervision has been confined to a summary examination, carried out as discreetly as possible in the case of certain categories of travelers, such as emigrants, migratory workmen, and children coming for a vacation in Switzerland. At Buchs, 2,499 children and 39,039 emigrants were examined.

Goiter Commission

The goiter commission is continuing its work of following the large scale experiments in giving iodized table-salt as a general preventive measure for goiter. The commission called an international conference this year, which studied the problems of epidemiology and prevention.

Commission on the Deaf and Dumb

In the first report published on the deaf and dumb, 652 cases are reported from the canton of Zurich. It was found that the figures given by the 1920 census returns were far from exact. Of these 652 cases, 443 have been submitted to a minute medical examination which has demonstrated that the disability in 324 cases arose from congenital causes, and in ninety-nine the affliction was acquired as the result of diseases or trauma. It has been impossible to determine into which of these two categories the remaining twenty cases are to be placed.

Swiss Pharmacopeia

The federal commission appointed to frame the new Swiss pharmacopeia has about finished its labors. It had been hoped that this would be accomplished last year, but the reason for the delay was on account of the ever increasing number of drugs, making it difficult for the commission to make a choice among them.

ITALY

(From Our Regular Correspondent)

Oct. 15, 1927.

Researches on Congenital Syphilis

Through the initiative of the Piedmont Group of the Società per gli studii sessuali, a special meeting was held in Turin to study congenital syphilis in Italy. Professor Piccardi of Turin presided at the meeting.

Professor Artom presented a paper on the incidence of congenital syphilis in Italy, giving the statistical data that he had collected. There are in Italy 5,000 blind congenital syphilitics, while, of the thirty thousand deaf-mutes, in the majority their infirmity can be traced to congenital syphilis. In the psychiatric hospitals there are 4,000 mentally defective children and many adults with epilepsy or psychosis due to syphilis in the parents.

Dr. Fornara emphasized that, in order to make an exact diagnosis of syphilis in the new-born, it is necessary to employ four methods of research: clinical symptoms and data presented by the history of the mother; examination of the maternal and fetal portions of the placenta; clinical symptoms presented by the child, and serologic examination of the mother and the child. The question of the pathogenesis of congenital syphilis is not yet solved, although the usual theory is that it is the consequence of a maternal infection transmitted to the product of conception, by the extra-

placental route. But there are other theories supported by well known authorities, such as that of infection from the father.

Professor Mensi dealt with the transmission and evolution of congenital syphilis, basing his conclusions on a series of 210 personal cases of established types.

Professor Canelli took up the prophylaxis and treatment of congenital syphilis, emphasizing particularly two factors; namely, the sanitary conscience of the physician and the layman, and what is called the *direzione morale*, or moral management, of the disease. He declared himself an advocate of the biographic record-book and of the prematrimonial certificate.

Professor Piccardi considered the prenatal prophylaxis of congenital syphilis under three heads: 1. The product of conception is very sensitive to the action of syphilis. 2. It is easy to modify by treatment (especially, by arsphenamine) the morbic state of the parents. 3. The transmission of syphilis by the father may be regarded as practically nonexistent. The results that he obtained, on the basis of these conceptions, are as follows: (1) in untreated syphilis: 126 pregnancies, infected progeny 106, or 84 per cent; (2) syphilis treated with mercury: forty-three pregnancies, infected progeny twelve, or 28 per cent, and (3) syphilis treated with arsphenamine: sixty pregnancies, infected progeny four, or 6 per cent.

Professor Fontana explained his plan for the founding in Turin of a center for the granting of prematrimonial certificates on the basis of examination of applicants. Several further communications by Maccone, Laura, Reviglio and Piccardi were presented.

The Incidence of Infectious Diseases in 1926

The *Bollettino delle malattie infettive* contains the official report for the year 1926 on the incidence of infectious diseases, in comparison with the previous year. Almost all infectious diseases show a decrease in the number of cases, over that of 1925. The exception are influenza, typhoid and paratyphoid, and pertussis. The principal figures are as follows: measles, 98,155 cases in 1926, as against 164,485 in 1925; scarlet fever, 16,062 cases in 1926 and 16,733 in 1925; typhoid, 35,649 cases in 1926 and 24,264 in 1925; paratyphoid infections, 6,711 cases as against 5,036; influenza, 184,499 cases in 1926 and 64,736 in 1925; diphtheria, 14,923 cases in 1926, as compared with 15,383 in 1925; pertussis, 31,282 cases in contrast with 23,756 for the previous year; epidemic encephalitis, 450, as against 681, and malaria, 220,602 in 1926 and 283,109 in 1925. There were, in addition, in 1926, thirty-four cases of exanthematic typhus, thirty-one of which developed in Naples, being due to imported food products. There were no cases reported of Asiatic cholera, plague or yellow fever.

Necrology

The death is announced at Pisa, at the age of 76, of Prof. Carlo Fedeli, formerly director of the institute of special medical pathology at the University of Pisa. His scientific productions were chiefly in the fields of pathology of the liver and of metabolism, symptomatology and history of medicine. He was a student of hydrology, and for many years he was one of the principal consultants at Montecatini Springs.

The University of Modena has lost, by death in his sixty-ninth year, Prof. Guzzoni degli Ancarani, director of the Clinica Ostetrico-Ginecologica. His numerous scientific publications (around 200) treat the history of medicine and the various subjects of his specialty. Among his more important works, in addition to his contribution to the treatise on obstetrics by Cuzzi, are his researches on tuberculosis of the uterus, membranous endometritis, twin pregnancy, the treatment of placenta praevia, and operative treatment of uterine displacement. He bequeathed considerable sums to the universities in which he had been an instructor, and to the scientific societies that he had aided to found.

The International Conference on Goiter

At the first international conference on goiter, held at Bern, Italy was represented by Dr. Ambrosi, connected with the general management of the public health service; Professor Pighini, director of the scientific laboratories of the Istituto psichiatrico di Reggio Emilia, and Drs. Marchesa and Muggia. In discussing the topic "The etiology and epidemiology of goiter," Professor Pighini supported the theory that goiter is due to the action of toxic chemical substances present in the water, which may act either directly or by causing the formation in the organism of other toxic substances. At the suggestion of the Italian Group, the convention approved the appointment of an international commission, charged with the duty of establishing uniform criteria from the collection of statistics, to be applied in all countries.

Sanitary Regulations Governing Official Meat Inspection

The *Gazzetta Ufficiale* has published the new regulations governing meat inspection. The slaughtering of animals designed for human consumption must be carried out exclusively in abattoirs, or public slaughterhouses. For the killing process, methods must be adopted that produce death in the shortest time possible, preferably by the use of apparatus that discharges a projectile or by the severing of the medulla oblongata. Animals must be subjected to examination just before they are slaughtered, and this must be followed by the sanitary inspection of the meat, which must be provided with stamps indicating the result of the inspection.

The personnel attached to the meat inspection laboratories must hold medical certificates attesting their immunity from transmissible diseases, and must be subject to periodic health examinations by health officers.

BERLIN

(From Our Regular Correspondent)

Oct. 29, 1927.

The New Law Protecting Expectant Mothers

According to the law that went into effect, Aug. 1, 1927, the provisions pertaining to the employment of pregnant and puerperal women apply to all workers and employees, whether married or unmarried, who are subject to the compulsory health insurance legislation. This limitation of the law to those insured under the compulsory social insurance plan was necessary in order that adequate support of the workers and employees should be assured through the weekly benefits granted by the *krankenkassen*. However, the protection does not extend to the insured workers who are employed in agriculture, forestry, animal husbandry and fishing, or those engaged in ordinary household pursuits.

Pregnant workers and employees to whom the law applies are entitled to demand release from all work if they can show by a medical certificate that they will presumably be confined within six weeks. Puerperants may not be employed within six weeks after their confinement. Whereas pregnant workers have the right to refuse to work during the six weeks preceding their confinement, they are not compelled to give up their employment during such period. Puerperants, on the other hand, are positively prohibited to take employment during the first six weeks following their confinement. Employers or managing directors who violate the law are subject to a fine, while repetition of the offense is liable to bring a prison sentence. Furthermore, puerperants may—though there is no compulsion—refuse to work during the second six weeks if they furnish a medical certificate to the effect that their refusal is due to illness which is the result of pregnancy or

childbirth, or which was exacerbated thereby. If they request it, nursing women must, during the first six months following their confinement, be allowed time off to nurse their children, either a single hour period or two half-hour periods, daily.

During the monthly menstruation periods, workers and employees are entitled to take time off without their status being affected thereby. However, employers are not compelled to pay for such periods when no work is done, unless an agreement was entered into to that effect. Employers may not, on the other hand, make any deductions for time lost through nursing a child.

During the twelve weeks' period beginning six weeks before and extending six weeks beyond confinement, an employer may not dismiss an employee if, at the time, he was aware of the pregnancy or confinement, or if the employee informs him of the fact, immediately on receipt of the notice of dismissal. If, at the end of the twelve-week period, the employee is still ill as a result of the pregnancy or confinement, as shown by a physician's certificate, the period is automatically extended for the duration of such incapacity, but only for a further six weeks, at the most, or for a period of eighteen weeks altogether. If the employer insists on the dismissal of an employee at a time that falls within the twelve-week period (or the eighteen-week period, as the case may be), the employer will be under obligations to pay the employee the accustomed wages for the full extent of the period of protection. However, dismissals based on some important reason; for example, a punishable offense committed by the employee, are not affected by the provisions of the protective law.

The Relative Nutritional Value of White and Brown Breads

Reference has already been made to the researches carried out by Professor Friedberger in his Forschungsinstitut für Hygiene und Immunitätsforschung, located near Berlin. As earlier experiments have shown, the weight-increasing value of foods is dependent, to a certain extent, on the mode of preparation. Friedberger has been carrying on experiments to determine whether *schwarzbrot* (brown bread, rye bread) with its higher calory content or white bread with its greater assimilability is to be preferred. In collaboration with his assistant Seidenberg, Friedberger has tested the weight-producing value in rats of various kinds of bread in common use. Rats of the same litter and the same weight were fed for five months with *"klopferbrot"* (boxer bread), graham bread, Simon's bread, white bread and white rolls. It was found that *klopferbrot* produced the greatest increase in weight; graham bread came next, *graubrot* and Simon's bread followed, while white bread produced the smallest increase. When the inside of the loaf and the crust were fed separately, it was found that the white breadcrust produced loss of weight. The Berlin rolls (*schrippe*), which are not prepared with milk, as white rolls usually are, but with water, were found to have no, or only minimal, weight-producing value.

Experiments with zwieback showed that the animals constantly lost weight up to their relatively early death. Friedberger ascribes this to the greater heating and the double baking process to which zwieback is subjected. In order to prove his assumption, he secured from the same factory from which the zwieback had come some of the *einback*, as the loaf is called before it is subjected to the second baking. It was found that, within the first thirty days, the animals fed the *einback* had increased very slightly while the animals fed the zwieback showed a slight decrease in weight. After thirty days, the animals fed the zwieback began to lose weight rapidly; within two months they all died after considerable loss of weight, in spite of the fact that they ate just as much as, and often more than, the animals fed the *einback*. The latter continued to increase in weight for four months.

The experiments confirm former experiments on the changes in the weight-producing value of food brought about by heating. They show, furthermore, the great variation in the weight-producing value of the several breads in common use. But they show, at the same time, how wide is the discrepancy between the thus established weight-producing value of certain foods and the conclusions reached by experimental dietetics on the basis of supposedly exact and unequivocal experiments. The physiology of nutrition teaches, on the basis of the analysis of foodstuffs and the determination of nitrogen in the urine and feces, that white bread is best utilized. But we do not know whether the degree of utilization is the chief criterion in judging of the quality of an article of diet. There is much evidence to the contrary, and, in any event, from the standpoint of the weight-producing value, the breads made from the whole grain are in the ascendancy.

To be sure, the experiments were conducted with rats and not with human beings, and Friedberger is fully conscious of the fact that an application to man of the results of the experiments is not permissible without further investigation. However, recent clinical observations have shown the favorable effects of raw food on the blood pressure and on the excretion of sugar and proteins. Friedberger therefore raises the question whether the conclusions with reference to man that physiology has reached are not in need of a revision.

Infectious Diseases in Berlin

Professor Seligmann, director of the scientific department of the central bureau of the public health service in Berlin, has given the following account of the present and the expected incidence of infectious diseases in Berlin:

Every year there begins in the fall, during the months of August and September, an increased incidence of scarlet fever and diphtheria; the apex is reached in the winter, and in the spring and summer the figures drop to the old level. The same thing occurred this year, but the retrogression during last summer was not as marked as usual, and as last fall brought an increase of both diseases far beyond the records for the preceding years, the impulse of which is still felt, it is feared that there will be a higher incidence than usual. Fortunately, scarlet fever is taking on, for the most part, a mild form.

For almost a decade, diphtheria had been in the background and no one thought that the danger was longer acute, but the fall of 1926 brought an increase of diphtheria cases. Since then it has continued at an undesirably high level and has increased somewhat in virulence. In a number of instances medical aid was not available as early as it was needed, and in some cases serum treatment was omitted owing to the high price of the remedy. Therefore the authorities have furnished a serum that, on the request of a physician, can be given, free of charge, to persons who are unable to pay for it. Leaflets dealing with the subject of scarlet fever and diphtheria are distributed in the schools, and the school and the welfare physicians are keeping close watch on all throat disorders.

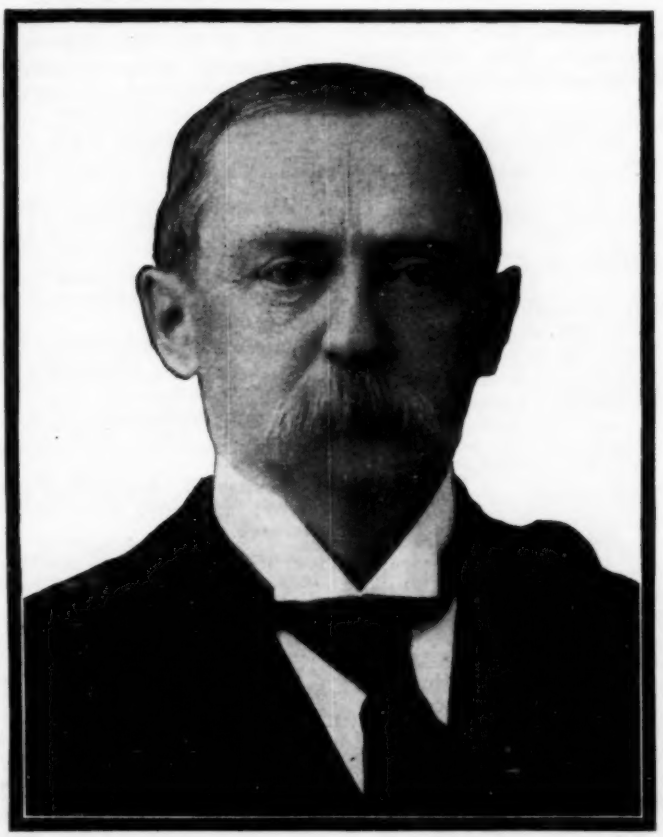
Infantile paralysis, which is prevalent in severe epidemic form in Roumania, and which has appeared also in a number of places in Germany, has not invaded Berlin as yet in epidemic form. The number of cases, which is always the highest in August and September, has not notably increased, and the incidence at present is lower than during the corresponding months of last year.

There has been no notable increase of influenza-like conditions, as yet, this fall.

Dysentery and typhoid present a low incidence. There has been an unusually large number of cases of meat poisoning of late, and a considerable number of cases of paratyphoid have been observed.

Deaths

John Collins Warren ✠ emeritus professor of surgery, Harvard University Medical School, died at his home in Boston, November 3, aged 85. Dr. Warren was born in Boston, and graduated from Harvard University in 1863 and from the medical department of the university in 1866. He studied in London, Paris, Edinburgh, Vienna and Berlin, and in 1871 became instructor in surgery at his alma mater, being promoted to assistant professor in 1882, associate professor in 1887 and professor in 1893, becoming Mosley professor of surgery in 1899 and emeritus professor in 1907. For thirty-six years, Dr. Warren was attending surgeon to the Massachusetts General Hospital. He assisted in the founding of the Collins P. Huntington Memorial Hospital in 1911, and in the present Harvard Medical School. He was the son of Dr. Jonathan Mason Warren, who assisted his father, Dr. John Collins Warren, in 1846 in the first public demonstration of a surgical operation under ether anesthesia, and was the father of Dr. John Warren, at present associate professor of surgery at Harvard. Dr. Warren was for about eight years editor of the *Boston Medical and Surgical Journal*, was the author of Healing of Arteries in Animals and Man After Ligature, and Surgical Pathology and Therapeutics, and part author of the International Textbook of Surgery. He was for many years chairman of the Harvard Cancer Commission, and was a past president of the American Surgical Association, the Massachusetts Charitable Eye and Ear Infirmary, and the Humane Society of the Commonwealth of Massachusetts. Dr. Warren was intimately associated with the welfare of the community in which he lived. He was honored by his associates and by universities and scientific societies in this country and abroad.



JOHN COLLINS WARREN, M.D., 1842-1927

Charles Edmund Simon ✠ professor of filtrable viruses at Johns Hopkins University School of Hygiene and Public Health, died at his home in Baltimore, November 8, after an illness of several months. Dr. Simon was born in Baltimore in 1866 and graduated from Johns Hopkins University in 1888 and from the University of Maryland School of Medicine in 1890. He was for a time assistant resident physician at Johns Hopkins Hospital; in 1907 he established the first clinical laboratory in Baltimore. He was clinical microscopist to Union Protestant Infirmary, and from 1910 to 1920, was professor of clinical pathology and physiologic chemistry at his alma mater. In 1921 he became lecturer in medical zoology at Johns Hopkins University School of Hygiene and Public Health, in 1922 resident lecturer in filtrable viruses and in 1927 professor of filtrable viruses. He was a member of the American Physiological Society and the American Biochemical Society, the managing editor of the *American Journal of Hygiene*, and the author of the well known books "Infection and Immunity," "Physiological Chemistry" and "Physical Diagnosis."

Gilbert E. Robbins, Chillicothe, Ohio; Kentucky School of Medicine, Louisville, 1889; member of the Ohio State Medical Association; member of the board of education; health officer of Chillicothe and Ross County; for four years trustee of the Athens (Ohio) State Hospital; aged 65; died, October 7, of heart disease.

Otey Miller, Fayetteville, Ark.; Medical Department of Washington University, St. Louis, 1893; member of the Arkansas Medical Society; served during the World War; on the staff of the Fayetteville City Hospital; aged 59; died, September 18, of carcinoma of the cervical glands.

William W. Hutchinson, Enosburg Falls, Vt.; University of Vermont College of Medicine, Burlington, 1874; member of the Vermont State Medical Society; for forty-two years justice of the peace; formerly member of the state legislature; aged 77; died, September 6, of myocarditis.

Arthur Bryant Wetherell, Holyoke, Mass.; Harvard University Medical School, Boston, 1883; member of the Massachusetts Medical Society; formerly member of the board of health; at one time on the staff of the Holyoke City Hospital; aged 72; died, March 18, of angina pectoris.

Walter M. Quinn, Winner, S. D.; Creighton University School of Medicine, Omaha, Neb., 1905; member of the South Dakota State Medical Association; aged 48; died, July 20, at Omaha, Neb., following an operation for intestinal obstruction due to diverticulitis.

Stephen Hester Rantz ✠ Placerville, Calif.; University of California Medical School, San Francisco, 1893; county health officer; part owner of the Placerville Sanatorium; aged 59; died, September 3, at the Fabiola Hospital, Oakland, of bronchopneumonia.

John A. Wilkins, Delta, Ohio; Starling Medical College, Columbus, 1873; Civil War veteran; formerly mayor of Delta, councilman, member of the board of education, and county coroner; aged 83; died, September 15, at Toledo, of influenza and dysentery.

Edward Guilford Cary, Albany, N. Y.; Stanford University School of Medicine, San Francisco, 1914; member of the Society of American Bacteriologists; served during the World War; aged 47; was found dead, October 12, of acute dilatation of the heart.

Thaddeus Earl Wilkerson, Jr., Raleigh, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1914; member of the Medical Society of the State of North Carolina; served during the World War; aged 41; died, September 14, of meningitis.

Elwin Wallace Hannock, Albany, N. Y.; Albany Medical College, 1910; member of the Medical Society of the State of New York; on the staff of the Memorial Hospital; aged 41; died suddenly, August 5, at Spring Lake, N. J., of cerebral hemorrhage.

Joseph Elliott Colburn, Chicago; Albany (N. Y.) Medical College, 1877; formerly on the staffs of the Cook County Hospital and the Illinois Eye and Ear Infirmary; aged 74; died, October 27, at Winthrop, Ill., of cerebral hemorrhage.

Ora Moses Holman ✠ Guam; Indiana University School of Medicine, Indianapolis, 1924; lieutenant, junior grade, U. S. Navy; aged 33; died, September 24, at the U. S. Naval Hospital, Mare Island, Calif., of chronic nephritis.

Oscar Leonard Grumbrecht, Camden, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1890; on the staff of the West Jersey Homeopathic Hospital for thirty years; aged 60; died, in October, of myocarditis.

Moses S. Canfield, Frankfort, Ind.; Eclectic Medical Institute, Cincinnati, 1873; formerly member of the Indiana State Board of Registration and Examination; aged 75; died suddenly, September 25, of cerebral hemorrhage.

William Edwin Hitchcock, Newark, N. J.; Yale University School of Medicine, New Haven, 1866; member of the Medical Society of New Jersey; Civil War veteran; aged 85; died, October 7, of cerebral hemorrhage.

Persifer N. Thompson, Toms River, N. J.; Jefferson Medical College of Philadelphia, 1883; aged 65; died, September 10, at the University of Pennsylvania Hospital, Philadelphia, of carcinoma of the liver.

Frank Furman Blair, Birmingham, Ala.; Medical Department of the Tulane University of Louisiana, New Orleans, 1905; member of the Medical Association of Alabama; aged 46; was shot and killed, October 13.

Maud Agatha Powell, Laconia, N. H.; Woman's Medical College of Pennsylvania, Philadelphia, 1906; member of the Massachusetts Medical Society; aged 53; died, August 2, of general carcinomatosis.

Robert Lee Withers, San Antonio, Texas; University of Pennsylvania School of Medicine, Philadelphia, 1893; aged 58; died, July 24, following a cerebral hemorrhage suffered some years ago.

Jesse A. Naylor ✠ Clyde, Kan.; University Medical College of Kansas City, Mo., 1906; aged 46; died, September 23, at St. Joseph's Hospital, Kansas City, Mo., of rupture of the abdominal aorta.

William Harrison Williams, Franklin, Ky.; Vanderbilt University School of Medicine, Nashville, Tenn., 1884; member of the Kentucky State Medical Association; aged 86; died, October 1.

Joseph Edmund Egide Roy, Manchester, N. H.; University of Montreal (Que.) Faculty of Medicine, 1893; aged 74; died, August 29, at the Notre Dame Hospital, of chronic myocarditis.

William S. Phillips, Grand Junction, Tenn.; College of Physicians and Surgeons, Baltimore, 1889; member of the Tennessee State Medical Association; aged 65; died, September 22.

Clifford Haliday Baumgardner, Springfield, Ohio; Ohio Medical University, Columbus, 1903; veteran of the Spanish-American War; aged 51; died, September 3, of heart disease.

Cyrus R. Hunt, McFall, Mo.; American Medical College, St. Louis, 1878; Eclectic Medical Institute, Cincinnati, 1882; for many years mayor of McFall; aged 81; died, August 28.

Guy B. Cross, De Witt, Neb.; Creighton University School of Medicine, Omaha, 1904; member of the Nebraska State Medical Association; aged 50; died suddenly, September 30.

Ellery Cola Hebbard, Boston; Bellevue Hospital Medical College, New York, 1870; member of the Massachusetts Medical Society; aged 80; died, October 4, of chronic myocarditis.

George D. Gordon, St. Louis; St. Louis College of Physicians and Surgeons, 1904; aged 47; died, August 17, at St. Joseph's Hospital, Highland, Ill., of chronic nephritis.

Absalom S. Baker, Snow Ball, Ark. (licensed, Arkansas, 1903); member of the Arkansas Medical Society; formerly member of the state legislature; aged 60; died, October 3.

William Harrison French, Cedar Rapids, Iowa; Rush Medical College, Chicago, 1874; member of the Iowa State Medical Society; aged 87; died, September 25, of nephritis.

Robert Edwin Harney, Boston; Tufts College Medical School, Boston, 1914; member of the Massachusetts Medical Society; aged 49; died, October 3, of myocarditis.

Anna S. Brown Corr, Juneau, Wis.; Northwestern University Woman's Medical School, Chicago, 1890; aged 63; died, October, 7, of myocarditis and coronary sclerosis.

Oliver Thomas Shenick, San Francisco; Rush Medical College, Chicago, 1877; formerly a practitioner in Chicago; aged 77; died, September 27, of cerebral hemorrhage.

William Taylor Good, Alloway, N. J.; Jefferson Medical College of Philadelphia, 1886; aged 68; died, April 19, in Philadelphia, of an overdose of morphine.

Henry Rikicadzu Okamoto, Sacramento, Calif.; Northwestern University Medical School, Chicago, 1918; aged 42; died, August 19, in Stockton, of tuberculosis.

Samuel D. Durham, Maxeys, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1884; aged 67; died, September 13, of carcinoma of the face.

William Earl Grim, Cameron, W. Va.; Baltimore Medical College, 1898; served during the World War; aged 52; died, October 7, following a long illness.

Mortimer F. Hansbrough, Front Royal, Va.; College of Physicians and Surgeons, Baltimore, 1874; aged 78; died, October 5, of cerebral hemorrhage.

Jasper D. Wooster, Wales Center, N. Y.; University of Buffalo School of Medicine, 1887; formerly postmaster; aged 70; died, September 21, of uremia.

Charles Hugh McLean, Detroit; College of Medicine and Surgery, 1904; member of the Michigan State Medical Society; aged 46; died, October 13.

James B. Ward, Geneva, Ind.; Medical College of Indiana, Indianapolis, 1882; aged 80; died, September 21, of arteriosclerosis and mitral insufficiency.

Alexander Caird, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1896; aged 84; died, October 14, of cerebral hemorrhage.

James Adams Newson, Milford, Conn.; Trinity Medical College, Toronto, Ont., Canada, 1900; aged 57; died, September 22, of cerebral hemorrhage.

Sherman T. Moyer ✠ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1886; aged 63; died, October 9, of angina pectoris.

James Archibald McGibbon, Edmonton, Alta., Canada; McGill University Faculty of Medicine, Montreal, Que., 1908; aged 43; died, recently.

Herbert Osgood True, Cambridge, Mass.; Harvard University Medical School, Boston, 1886; aged 68; died, September 21, of paralysis agitans.

Edgar G. Dick, Ashland, Ky.; Hahnemann Medical College and Hospital, Chicago, 1888; aged 76; died, August 13, of valvular heart disease.

Thomas Bennett Scott, Sault Ste. Marie, Mich.; Detroit College of Medicine and Surgery, 1894; aged 68; died, September 5, of myocarditis.

Alpheus P. Buchman, Seattle; Cincinnati College of Medicine and Surgery, 1870; aged 82; died, September 10, of arteriosclerosis.

Thomas Cle'and, New York; United States Medical College, New York, 1880; aged 84; died, October 16, of cerebral hemorrhage.

James F. Duncan, Waco, Texas; Kentucky School of Medicine, Louisville, 1881; aged 74; died, July 15, of a cerebral hemorrhage.

Anson R. Brackett, Chicago; Medical College of Ohio, Cincinnati, 1880; aged 72; died, October 28, of chronic nephritis.

Novitas B. Aspinall, Plymouth, Ind. (licensed, Indiana, 1897); aged 65; died, October 11, of carcinoma of the stomach.

Allen J. Fowler, Hogansville, Ga.; Atlanta Medical College, 1885; aged 70; died suddenly, October 11, of heart disease.

Lucius B. Parmele, Pasadena, Calif.; University of Buffalo (N. Y.) School of Medicine, 1867; aged 87; died, in June.

Ca'vin A. Seymoure ✠ Wawaka, Ind.; Indiana Medical College, Indianapolis, 1876; aged 80; died, October 4.

Marriages

HARRY G. LICHTSCHEIN, New York, to Miss Rayon Edith Leigh of Lyndhurst, N. J., October 14.

ERICH WISIOL, Stevens Point, Wis., to Miss Karleanne Scharman of Marshfield, August 29.

PAUL HERBERT MARTIN, Ligonier, Ind., to Miss Edith Fowler of Anderson, August 21.

JOHN C. BURNS, Wyncote, Pa., to Miss Mary G. Desmond of Philadelphia, September 10.

ERNEST L. STEFANI to Miss Martha Abigail Heinicke, both of Detroit, September 10.

ROBERT KORN LIPPMANN to Miss Helen Kaufmann, both of New York, October 20.

HARRY BERNARD FEILER to Miss Cecilia Golden, both of New York, October 29.

NORMAN G. TUFFORD to Miss Theodora Teal, both of Detroit, September 20.

CHARLES F. VOIGT, Midway, Ky., to Miss Nell Noland of Lancaster, in August.

FRANK M. WISELEY to Miss Mary C. Shafter, both of Findlay, Ohio, recently.

JULIAN LEO HARGROVE to Miss Mary Waldo, both of Bartow, Fla., October 5.

WIE KIM LIM to Miss Katie Gunn Moy, both of Detroit, September 3.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

HORACE D. REYNOLDS—QUACK

A Persistent Faker Once More in the Toils

Ohio papers of October 26, 1927, reported that Horace D. Reynolds of Cleveland was being held without bond when two victims died and four others became seriously ill following the administration of Reynolds' so-called serum.

Reynolds has a record that smells to high heaven. He and those associated with him have operated quack offices in various large cities—Chicago, Cleveland, Pittsburgh, Buffalo, Detroit, etc.—that are described as "Research Laboratories." There was a "Buffalo Research Laboratory," there is a "Cleveland Research Laboratory," a "Pittsburgh Research Laboratory," and a "Philadelphia Research Laboratory." In Chicago Reynolds' concern was known as the "State Research Laboratories." The last named was conducted in such a way as to give the ignorant victims the idea that the state of Illinois was behind it. The State Research Laboratories of Chicago, which had been known as the "Blood Cell Serum Laboratory," flourished until the Chicago *Tribune* in February, 1926, exposed the Reynolds quackery and practically drove it from the city.

Horace D. Reynolds, it seems, claims to have been graduated in 1892 by the Cincinnati College of Medicine and Surgery (long since extinct) and was licensed in Tennessee in 1894 and in Illinois in 1895. As long ago as 1906, Reynolds was carrying display advertisements in Chicago papers. Some of his advertising read:

"Blood and Skin Diseases Permanently Cured by Dr. Reynolds' Specific Blood Cell Remedies."

"My Specific Blood Cell Remedies permanently cure Blood Poison, Skin Diseases, Lupus, Rheumatism, Ulcers, Nervousness, Bladder and Kidney Troubles, Varicose, Weak Blood Vessels."

In 1906, Chicago papers recorded the arrest of H. D. Reynolds on charges of operating a confidence game, threats of doing bodily injury and use of obscene language.

In 1913, Chicago papers again recorded the arrest of Reynolds on the charge of using the mails to defraud. The Government estimated that Reynolds mulcted the public of more than half a million dollars by his fraudulent scheme. After the case had been continued repeatedly it finally came to trial three years after his arrest. Reynolds then pleaded guilty and was fined $100.00 and costs!

In 1921, Reynolds was in Nashville, Tennessee, advertising his "blood cell serum," recommending it for anemia, constipation, diabetes, hay-fever, paralysis, pyorrhea, morning sickness, and other conditions too numerous to mention.

In August, 1922, a newspaper published in the Upper Peninsula of Michigan reported the death of a Mrs. Ben Hankin following an "injection of serum." It seems that Mrs. Hankin came to Chicago to visit friends, and, because she had lost weight, she was attracted by an advertisement of the Blood Cell Serum Laboratories—operated by Reynolds—claiming that an injection of the serum resulted in an increase in weight and a general improvement in health. She had been examined only a few weeks previously by a reputable physician in her home town and found to be in excellent health.

In September, 1922, a young man from Gary, Indiana, came to the A. M. A. headquarters in Chicago stating that his father had seen the Reynolds advertising in the Hearst papers and had been coming in to Chicago and taking "treatments." He took four of them at $10 a treatment. The fourth treatment was taken at 8:20 p. m., August 29. Within four hours the man was dead. The coroner of Gary reported that, following the necropsy, he was of the opinion that the Reynolds injection was the cause of death.

In 1923, the Legal Aid Bureau of the United Charities of Chicago and the Illinois Social Hygiene League both brought to the attention of the American Medical Association cases of quackery on the part of the Reynolds' Chicago concern.

Early in 1926, the Chicago *Tribune* investigated Reynolds and his methods, and the report that was published in that paper finally resulted, as has already been stated, in driving Reynolds out of Chicago. The *Tribune* found that Reynolds, in addition to advertising, had another method of getting victims, thus:

"More than a dozen women were employed by Old Doc Reynolds to bring in new patients, it was learned. They would go about among their neighbors, boasting of miraculous cures they themselves had experienced with Reynolds. The women were instructed to urge their acquaintances to go to see Reynolds even if they were well, 'just to see if anything was wrong with them.' A generous commission was paid to the woman agent for all business received."

In February, 1927, the Buffalo Better Business Bureau published in its Bulletin for March 22 a brief article on the "Buffalo Research Laboratory," which, it stated, was controlled by Horace D. Reynolds in connection with his son-in-law, George H. Harris. The Buffalo Better Business Bureau began to investigate the Reynolds quackery soon after it opened in that city. After this investigation was practically completed, the Reynolds concern published an advertisement in local papers, stating that they would welcome an investigation. Less than a week after the appearance of this advertisement, the Buffalo Research Laboratory office was voluntarily closed and went out of business.

High Blood Pressure Shortens Life
Blood Cell Protein Serums
Pittsburgh Research Laboratories
Your Health Depends Upon Your Blood—
PHILADELPHIA RESEARCH LABORATORY
Keep Well
Blood Cell Serums Administered Free of Charge in Chicago
The Objects of the State Research Laboratory
We Make Serums for Sick People
A Complete Health Service
To Get the Sick Well At the Least Possible Cost
Buffalo Research Laboratory

The responsibility for such quacks as Reynolds lies primarily on the state which interposes no check on activities that, at best, result in defrauding the citizens and, at worst, may be responsible for the death of its citizens. Reynolds' professional record speaks for itself, yet neither the state of Illinois nor the state of Tennessee, which granted this man licenses to practice, has revoked the licenses. Next to negligent state officials, the responsibility for quacks like Reynolds lies on the newspapers that furnish the point of contact between the faker and his victim. It is fair to infer

that the Reynolds quackery could not exist for six months in any city in which all the newspapers consistently refused to accept the advertising. Moreover, as has been shown in the case of Chicago and Buffalo, Reynolds can be driven out of a city either by a newspaper or a Better Business Bureau that will investigate his methods and give the public the facts.

Correspondence

BREAST FEEDING AND THE PEDIATRICIAN

To the Editor:—Dr. Richardson's efforts in behalf of breast feeding are well known in New York and I have read with interest his recent contribution, but I cannot agree with him in one of the conclusions he presents in his article (Progress of Breast Feeding in New York State, THE JOURNAL, October 29), in which he states that "whereas the general practitioner usually welcomes the new teaching with real enthusiasm, the pediatrician is apt to be harder to convince." This is not borne out by my experience, and my close association with obstetricians and maternity hospitals gives me an opposite point of view. At Manhattan Maternity, where there were 1,155 babies born in 1926, 70 per cent were breast fed. Of sixty-seven women reported in October, fifty-six were nursing their babies. At the Woman's Hospital, careful observations are made on nursing periods and the quantity taken at each nursing. Mothers are encouraged to nurse their babies. Both of these hospitals have pediatric services cooperating with the obstetricians. In lectures to the nurses stress is laid on the importance of breast feeding, both for mothers and for babies. At Manhattan Maternity, Dr. Ratner and I checked the regular diet of mothers reporting to the postpartum clinic and we learned that a special diet for nursing mothers was seldom indicated, thus relieving the women of anxiety in regard to "milk making" food. As pediatricians study the requirements of nutrition and the physiologic needs of infancy, they are qualified to give advice as to the form and type of artificial food; but so far as I am aware they do not do this where breast feeding is possible but only when, as specialists, they are requested to supervise artificial feeding.

WALTER LESTER CARR, M.D., New York.

CONGENITALLY ABSENT GALLBLADDER

To the Editor:—In my article "Interesting Aspects of a Case of Congenitally Absent Gallbladder" (THE JOURNAL, August 27) I commented on a similar case reported by Dr. Lintz.

My comment was: "The exceptional condition found by Dr. Lintz is, in great likelihood, to be explained on the same principle as obtains in the recovery of B bile in long past cholecystectomized patients, wherein the biliary ducts often undergo gradual dilatation."

In a letter which appeared in THE JOURNAL, September 24, Dr. Lintz rejects my explanation, stating that I missed the crux of the situation, because the surgeon, as I had stated in my article, had very carefully examined for dilatation of the biliary ducts; but no dilatation of the ducts could be found. The B bile could therefore not have come from dilated ducts.

I believe that I did not make my explanation entirely clear. The dilatation I referred to as accounting for the presence of the B bile need not necessarily be confined to the visible ducts. There may also be dilatation of the intrahepatic radicles, the combined effect of which is sufficient to account for the stagnation and ensuing drainage of a bile bearing all the characteristics of B bile.

The genesis of a calculus is generally understood to be: stagnation, altered solution, precipitation of bile salts, calculus formation in the intrahepatic passages. This being possible, why not dark B bile coming directly from a damaged hepatic parenchyma? In short, when the surgeon failed to find a gallbladder and noted the absence of dilatation of the extrahepatic ducts, it is reasonable to assume that the dark B bile found by him owes its presence to the dilatation of the intrahepatic ducts.

MEYER GOLOB, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

POSSIBLE INFANTILE UTERUS

To the Editor:—I have a patient 24 years of age, married five years, with no pregnancies. I have found nothing operative in the pelvis, but she has a scanty menstrual flow with much pain. What in the recent medical field has been tried and not found wanting for such a case? As my practice is nearly all surgical, I want this information, and feel this is a case for medical treatment only. Please omit name.

M.D., Ontario.

ANSWER.—Naturally it is impossible to give a full reply to this question as the case falls into a class that is difficult to explain, even after thorough local and general examination. As a guess it would seem that this woman has infantile genitalia and the treatment should be directed along the lines to develop the organs and to correct any endocrinal disability as far as possible. Iodine and thyroid seem to be useful in such cases, given of course under proper supervision.

WASSERMANN TEST—A CONTENTION

To the Editor:—In a discussion that occurred at the Kansas City General Hospital, the following point or question came up. Will you be so kind as to answer this? Contention A: The Wassermann reaction is a true complement fixation test, but is not specific for syphilis. Contention B: The Wassermann reaction is not a true complement fixation test, and is not specific for syphilis. Which contention is correct?

O. J. PRINTZ, M.D., Kansas City, Mo.

To the Editor:—A discussion arose as to the Wassermann reaction. Contention A: The Wassermann reaction as used today is not a true complement fixation test. Contention B: The Wassermann reaction as used today is a true complement fixation test. Will you please give your opinion as to which is correct?

G. W. ROBINSON, JR., M.D., Kansas City, Mo.

ANSWER.—Neither contention is wholly correct. The Wassermann test is not a true complement fixation test but must be regarded, in the practical performance of the test, as specific or characteristic for syphilis.

ICTERUS INDEX

To the Editor:—What is the icterus index, how is it obtained and what does it signify?

M.D., Illinois.

ANSWER.—Several methods are available for determining the icterus index. The earliest seems to be that of E. Meulengracht (*Deutsches Arch. f. klin. Med.* **137**:38 [Aug.] 1921). Several more recent modifications, however, have been employed. One was recorded by H. P. Maue (Icterus Index of Blood Serum, *Surg. Gynec. Obst.* **35**:752 [June] 1922; abstr. THE JOURNAL, (July 15, 1922, p. 243):

"A solution of potassium bichromate 1:10,000 is used as a standard. From 5 to 10 cc. of blood is obtained, and the serum allowed to separate. The serum is compared in a colorimeter (Duboscq) with the standard bichromate solution. The standard may be set at 10, 15 or 20 mm. The icterus index is obtained by dividing the reading of the standard by the reading of the unknown. When the color of the serum is too dark, and cannot be compared with the standard solution, the serum is diluted with physiologic solution of sodium chloride until its color approaches that of the standard. In 156 cases giving no clinical evidence of jaundice, the lowest value obtained was 1.6 (fracture of skull), while the highest was 12 (pernicious anemia), the average being

36. An icterus index varying between 2.5 and 6 may be considered as normal."

A. L. Brown (A Rapid Clinical Method for the Determination of the Icterus Index, *Arch. Path. & Lab. Med.* **3**:409 [March] 1927) reports a method requiring a special series of standards.

The significance of the icterus index can be paraphrased from his article: A reading below normal indicates secondary anemia, while a higher figure indicates primary or hemolytic anemia and various degrees and types of obstruction in the biliary system.

The van den Bergh test of liver function, according to "The Practice of Medicine," by A. A. Stevens, is a fairly accurate means of determining the amount of bilirubin in the blood, and also of distinguishing bilirubin that has passed through the excretory cells of the liver (obstructive jaundice) from bilirubin that has been absorbed directly into the blood from the reticulo-endothelial cells (hemolytic jaundice). An immediate bluish-violet coloration when the diazo-reagent is added to the serum (immediate direct action) indicates obstructive jaundice. A reddish coloration, deepening to violet and occurring in from one to fifteen minutes (delayed direct reaction), suggests hemolytic jaundice.

PRESERVATIVE FOR SPECIMEN OF MALFORMED FETUS

To the Editor:—I am writing you about a boy, born, September 29. While death preceded birth by one or two days, it was, to all appearances, a full term labor with all parts fully developed. It was a breech presentation, and labor lasted about sixteen hours without instrumental delivery. The child had two pelves. One pelvis had two normal legs and feet, while the other pelvis had one normal leg and two feet divided in the foot. It had two chests with two normal arms and hands from one chest and one normal arm with two normal hands, divided at the wrist, from the other chest. The division seemed to be from the diaphragm up with two normal heads born both at the same time. I now have the specimen in a 50 per cent formaldehyde solution. Would you suggest any other solution as a permanent preservative?

M.D.

ANSWER.—In view of the fact that the specimen apparently has been for some time in a solution prepared by mixing solution of formaldehyde with an equal volume of water, it would not be necessary to change the solution in order to secure permanent preservation. The solution used is, however, much stronger than necessary and probably has already hardened the specimen thoroughly. A solution of formaldehyde 1 part to 8 parts of water would have answered all purposes very well.

DIET FOR PERNICIOUS ANEMIA

To the Editor:—Will you kindly give me the formula of the Minot-Murphy diet in pernicious anemia? Would that be a proper diet for secondary anemia, especially in a girl, aged 16 years, who has never menstruated? Please omit name.

M.D., Iowa.

ANSWER.—The essential feature of the Minot and Murphy liver diet in pernicious anemia is the administration daily of about 200 Gm. of cooked weight of mammalian liver. Possibly raw liver is more efficacious than cooked liver. This is combined with generous amounts of fruits and vegetables, containing especially from 5 to 10 per cent of carbohydrate, and red muscle meat. Kidney also can well be added to the diet.

Consult also THE JOURNAL, September 3, which contains three articles and an editorial on pernicious anemia. Furthermore, THE JOURNAL of September 17 and the issue of October 15 both contain recipes by which liver can be made palatable to patients.

Concerning the use of this method in secondary anemia: Minot and Murphy's belief that food might benefit patients with pernicious anemia was founded partly on the fact that "secondary anemia was occasionally associated with faulty diet." They declare, furthermore, that "a diet rich in liver can benefit other patients than those with pernicious anemia." But, after reading their work, the impression persists that diet is more or less specific in pernicious anemia and only adjuvant in secondary anemia. In pernicious anemia "the earliest response to the feeding of liver on the part of red blood cells is the appearance of a temporary, often marked increase of the reticulocytes," and "it is thought that liver, as well as kidney, feeding stimulates maturation of the megaloblasts that crowd the bone marrow of pernicious anemia in relapse. . . . In ordinary cases of secondary anemia," however, "there does not appear to be any significant increase of reticulocytes after the administration of liver, and in turn there is no accumulation of megaloblasts within the marrow."

A preferable course in treating secondary anemia, therefore, would seem to be if possible to learn its underlying cause and to treat that.

FORMULA FOR HAIR CURLER

To the Editor:—Kindly publish a good, harmless formula for making hair curl, together with details of use. Kindly omit name.

M.D., Los Angeles.

ANSWER.—Make up the following powder:

Dry sodium carbonate.....	750 Gms., about	23½ ounces
Powdered acacia.....	240 Gms., about	8 ounces
Musk xylene.....	5 Gms., about	1 drachm
Oil of rose geranium.....	5 Gms., about	1 drachm

Mix these. Dissolve a small dessertspoonful in a cupful of hot water. Sprinkle this on the hair before curling.

PYRIDIUM

To the Editor:—Merck & Co., New York, are advertising Pyridium for gonorrhea. Has it been examined by the Council on Pharmacy and Chemistry? I have enclosed the literature.

P. C. MANLEY, M.D., Scranton, Pa.

ANSWER.—Pyridium appears to have been originated by one Professor Ostromislenski, who came from Russia several years ago to give America the benefit of his researches. In a circular issued by Merck & Co. the preparation is said to be "a colloidal condensation product of Phenyl-Azo-Diamino-Pyridine Hydrochloride as prepared by Prof. Ostromislensky," and it is recommended in the treatment of "Genito-Urinary Infections especially Gonorrhea." Reference is made in the circular to "An extensive report of experimental, bacteriologic and clinical investigations . . . in Ostromislensky's book 'The Scientific Basis of Chemotherapy,' Part I." In this book (a paper bound pamphlet of 142 pages) the preparation is rather indefinitely described as an adsorbent compound "of diphenyl-diazo-alpha-alpha-diamino pyridine hydrochloride, or . . . with phenyl-azo-alpha-alpha-diamino-pyridine hydrochloride, or with its analogues or homologues"; it is stated to be an azo dye. The book recommends Pyridium not only for Gonorrhea but also for "Chancroid," "Serpiginous Ulcer of the Cornea," "Conjunctivitis," "Keratitis Herpetica," "Pyorrhea Alveolaris," "Infections of the Nose and Thoat," "Furunculosis," "Panaritium," "Cystitis," and other conditions. "Case reports" are given from the experience of Professor Ostromislenski and others who tried out the drug for him.

While Merck & Co. has circularized the medical profession with regard to Pyridium, apparently nothing aside from this book by Ostromislenski has been published concerning the therapeutic value of the product; nor has the firm presented the product to the Council on Pharmacy and Chemistry for determination of its acceptability for New and Nonofficial Remedies.

SEQUELAE OF EPIDEMIC ENCEPHALITIS

To the Editor:—W. I., a man, aged 27, was ill with encephalitis for six months in 1921. Apparently he was completely cured; there were no remaining evidences of an encephalitis. He kept working as a plumber's helper doing laborious work, and did not lose any time from work on account of illness, or have any occasion to consult a physician for any illness. In 1924 he was married, and his wife gave birth to a healthy child. Dec. 24, 1926, while he was working in a stooping position, a pair of chain tongues weighing 75 pounds fell from a height of 8 or 10 feet and struck him on the head in the occipital region, causing a laceration of the occipital scalp with symptoms of a concussion of the brain. He was removed to the hospital, where a roentgenogram was taken to rule out a fracture of the skull. The roentgenogram was negative.

The patient began to complain of headaches and dizziness from the time of the accident. Gradually he noticed that his head had begun to twitch. Nervousness set in with some facial weakness, and his head began to draw over to the left side. Around February there were definite symptoms of dystonia, facial weakness, tongue and uvula drawn over to one side, dropping of saliva from the corner of the mouth, the head drawn over to the left, tremor of the head and disturbance of vision, and eyes drawn over to the left. In fact, all the symptoms pointed toward a recurrence of encephalitis.

What bearing has the accident of December 24 on the present condition? Did it light up this old apparently cured infection? Are there any cases reported in which a man having encephalitis with an apparent cure will have a recurrence such as this without an intervening head injury?

M.D., New York.

ANSWER.—The recurrence of symptoms indicating progressive changes in the midbrain some time after apparent recovery from an attack of epidemic encephalitis is quite frequent, even in the absence of trauma or other obvious

precipitating cause. This is usually considered now as evidence of the presence of a chronic infection rather than merely the sequel of the acute inflammation. The interval of apparent health is of variable duration; sometimes the symptoms of the chronic inflammatory process follow immediately on the subsidence of the acute phase; an interval of from a few months to a year or two is not uncommon. The interval of six years in the case described is certainly unusually long. The apparent precipitation of symptoms by a trauma has been recorded, just as has been true in other chronic diseases of the nervous system, such as true paralysis agitans, general paralysis and disseminate sclerosis. The exact meaning of this sequence is not clear, but it is possible that the changes caused by a severe concussion may be sufficient to permit a latent infection to become transformed into a more active process. The literature on epidemic encephalitis and its sequels is extensive. An excellent review up to the year 1920 will be found in the report of the Association for Research in Nervous and Mental Diseases on Epidemic Encephalitis published by Paul B. Hoeber, New York, 1920. Another article to which reference may be made is "A Study of Four Hundred and Fifty Cases of Epidemic Encephalitis" by Josephine B. Neal, Henry W. Jackson and E. Applebaum, *Am. J. M. Sc.* **170**:708 (Nov.) 1925.

DISINTEGRATION OF BODY AFTER BURIAL

To the Editor:—Kindly let me know where I can find material on the rate of disintegration and the agents involved in the disintegration of the body after burial. Please use initials only. M.D.

ANSWER.—The chapter by Dr. James Ewing on "The Signs of Death," in Peterson-Haines-Webster's Legal Medicine and Toxicology (ed. 2, Philadelphia, W. B. Saunders Company **1**:175), contains much valuable and reliable information concerning the changes that take place in the human cadaver under various conditions.

INFECTION WITH SYPHILIS

To the Editor:—1. Is an untreated person with tertiary syphilis of long standing with no demonstrable skin or mucous membrane lesions capable of infecting another? 2. Should a person exposed to another with tertiary syphilis be given prophylactic treatment with arsphenamine and the like? 3. Should we ever refer to a person who has once been infected as cured without any qualifications or is there always a doubt as to whether a cure has ever been really accomplished? Please omit my name. M.D., New York.

ANSWER.—1. Long established clinical experience and modern experimental work demonstrate that old tertiary syphilis is not contagious.

2. Even if there are ulcerating lesions of the skin (gummas), they contain so few spirochetes that they are practically free from danger. Exposure to such a patient is therefore no indication for prophylactic treatment.

3. It is perhaps safest, as a rule, to regard every patient who has had syphilis as potentially still having it and therefore not cured, although there is a fair consensus among authorities that a patient may be regarded as cured who has been thoroughly treated from an early period after his infection and who has remained symptomatically free from all evidences of syphilis and free also from serologic evidence of syphilis for a considerable time, say two years.

IRRIGATING THE COLON

To the Editor:—I should appreciate some information concerning the Schellberg colon tube. It has been stated that this tube can be easily passed to the cecum, thereby irrigating the colon throughout its course. It has seemed to me that this is an extravagant claim in view of the fact that most authorities contend that so-called high irrigations are a fallacy, in that tubes are curled on themselves in the sigmoid and do not pass farther. Please omit name. M.D., Illinois.

ANSWER.—The Schellberg colon tube, in the absence of any structures or unusual bends due to redundances in the colon, may be passed around the colon up to and including the cecum. This is accomplished in a twofold manner: first by dilating the bowel ahead of the tube with a column of water, and secondly by shirring the bowel on the tube as the water is allowed to drain from the colon. The tube placed in the ascending colon may of course be observed with the x-ray. The tube has a special tip and is firm enough to be held in place during the manipulations of twisting and advancing slowly as the bowel is dilated with water just ahead of it.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 10-13. Chrm., Dr. S. W. Welch, 519 Dexter Ave., Montgomery.

COLORADO: Denver, Jan. 3. Sec., Dr. Philip Work, 324 Metropolitan Bldg., Denver.

DELAWARE: Wilmington, Dec. 13-15. Sec., Reg. Bd., Dr. Henry W. Briggs, Wilmington. Sec., Homeo. Bd., Dr. Henry W. Briggs.

DISTRICT OF COLUMBIA: Washington, Jan. 10. Sec., Dr. E. P. Copeland, 1801 Eye St., Washington.

ILLINOIS: Chicago, Jan. 10-12. Supt. of Registration, Mr. V. C. Michels, Springfield.

KENTUCKY: Louisville, Dec. 6. Sec., Dr. A. T. McCormack, 532 W. Main St., Louisville.

LOUISIANA: New Orleans, Dec. 8-10. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bldg., New Orleans.

MARYLAND: Baltimore, Dec. 13-16. Sec., Dr. Henry M. Fitzhugh, Baltimore. Sec., Homeo. Bd., Dr. J. S. Garrison, Baltimore.

MINNESOTA: Minneapolis, Jan. 3. Sec., Basic Science Bd., Dr. E. T. Bell, U. of Minnesota.

NORTH CAROLINA: Greensboro, Dec. 1. Sec., Dr. John W. MacConnell, Davidson.

NORTH DAKOTA: Grand Forks, Jan. 3-6. Sec., Dr. G. M. Williamson, Grand Forks.

OHIO: Columbus, Dec. 7-9. Sec., Dr. H. M. Platter, Columbus.

OREGON: Portland, Jan. 3-5. Sec., Dr. M. K. Hall, 816 Pittick Bldg., Portland.

RHODE ISLAND: Providence, Jan. 5-6. Sec., Dr. B. U. Richards, State House, Providence.

VIRGINIA: Richmond, Dec. 6-9. Sec., Dr. J. W. Preston, Roanoke.

WEST VIRGINIA: Morgantown, Nov. 22. Sec., Dr. W. T. Henshaw, New Capitol Bldg., Charleston.

WISCONSIN: Madison, Jan. 10-12. Sec., Reg. Bd., Dr. R. E. Flynn, 315 State Bank Bldg., La Crosse. Milwaukee, Dec. 17. Sec., Basic Science Bd., Prof. M. F. Guyer, Madison.

Florida June Examination

Dr. William M. Rowlett, secretary of the Florida Board of Medical Examiners, reports the written examination held at Tampa, June 13-14, 1927. The examination covered 100 subjects and included 10 questions. An average of 75 per cent was required to pass. Of the 65 candidates examined, 57 passed and 8 failed. The following colleges were represented:

PASSED College	Year Grad.	Per Cent
University of Alabama School of Medicine	(1884) 77.5; (1918)	77.6
University of Arkansas School of Medicine	(1918)	79.2
Atlanta Medical College	(1914)	79.3
Emory University School of Medicine	(1917) (1927) 79.5, 84.5, 84.7, 84.9, 86, 86.4, 86.8, 87.6, 88.5, 88.8, 89.8, 90	75
University of Georgia Medical Department	(1907) (1924) 90.2; (1926) 80.2	77
Chicago College of Medicine and Surgery	(1908) 75.6; (1916)	83
Hahnemann Medical College and Hospital	(1912)	81.5
Rush Medical College	(1926) 90.3; (1927)*	84.6
Indiana Med. College School of Medicine Purdue Univ.	(1907)	81
University of Louisville School of Medicine	(1909)	76.9
Tulane Univ. of La. School of Med	(1921) 83.6, (1926) 79.5,	82.3
Baltimore Medical College	(1896)	77.4
Johns Hopkins Univ. School of Med	(1925) 88.9, (1926) 87,	90.8
Middlesex College of Medicine and Surgery	(1917)	82.9
University of Minnesota Medical School	(1926)	84.8
St. Louis University School of Medicine	(1906) 83.3; (1926)	91.1
University of Nebraska College of Medicine	(1925)	91.2
Dartmouth Medical School, Hanover	(1899)	82.3
Columbia University College of Physicians and Surgeons	(1924)	90.3
University of Cincinnati College of Med	(1917) 82.4, (1927)	87.3
Western Reserve University School of Medicine	(1924)	93.7
Jefferson Medical College of Philadelphia	(1926) 88; (1927)	86.5
Meharry Medical College	(1925) 75; (1927) 78.3,	81.6, 86
Memphis Hospital Medical College	(1911)	78.4
Univ. of Tenn. College of Medicine	(1924) 80.1; (1927)	81.7
Vanderbilt University School of Medicine	(1922) 75.5; (1927)	84.5
Medical College of Virginia	(1916)	79.5
University of Havana, Cuba	(1920)†	81.5

FAILED College	Year Grad.	Per Cent
Atlanta Medical College	(1893)	72.7
University of Georgia Medical Department	(1907)	67.2
Hospital College of Medicine, Medical Department Centra' University of Kentucky, Louisville	(1902)	70.3
Kentucky University Medical Department	(1902)	58.6
Louisville Medical College	(1892)	37.8
Detroit College of Medicine	(1900)	60.8
Medico-Chirurgical College of Philadelphia	(1899	73.4
University of Montreal Faculty of Medicine	(1909)	73.9

* This candidate will receive his M.D. degree on completion of one year's internship in a hospital.

† Verification of graduation in process.

Book Notices

EXPERIMENTAL BACTERIAL AND CHEMICAL POLLUTION OF WELLS VIA GROUND WATER AND THE FACTORS INVOLVED. Report on the Geology and Ground Water Hydrology of the Experimental Area of the United States Public Health Service at Fort Caswell, N. C. Hygienic Laboratory Bulletin No. 147. Paper. Pp. 168, with illustrations. Washington: Government Printing Office, 1927.

Exact knowledge of ground water pollution from privies and cesspools has been meager. The experiments recorded in this bulletin were designed to yield accurate information concerning the factors influencing such contamination. No claim is made that the studies are any more than a start on the problems. The more important conclusions can be briefly stated. *Bacterium coli,* the organism used as an index of pollution, was recovered from well water at distances from 1 to 232 feet from a trench containing excreta. Chemical pollution was noted up to 450 feet. *Bacterium coli* traveled only in the direction of the ground water flow. In wet whether the pollution extended farther than in dry weather. *Bacterium coli* tends to localize in a blanket near the ground water table. When the ground water falls, the organism filters out into the adjacent soil and gradually dies if the soil remains dry. However, *Bacterium coli* was recovered, under certain conditions, two years and eight months after the original contamination. As the distance from the trench increases, the area of pollution contracts. Only by the continuation of such experiments can we expect to obtain scientific data on well water contamination. The problem is important since it affects the greater part of the rural population of the United States.

L'ANGINE DE POITRINE ET L'ANGINE ABDOMINALE. Par D. Danielopolu, professeur de clinique médicale à la Faculté de médecine de Bucarest. Paper. Price, 140 francs. Pp. 443, with illustrations. Paris: Masson & Cie, 1927.

In 1924, Danielopolu published a monograph that attracted considerable attention chiefly because it advocated the view that angina pectoris was a manifestation of myocardial fatigue, and because it discussed fully and with approval the surgical treatment of this condition. The present volume follows the same general lines as the earlier one. But theoretical questions are more fully gone into, a riper clinical experience is oftener drawn on, and illustrations are more freely used. Then there have been added an entirely new chapter on abdominal angina and a comprehensive bibliography. The volume is more than three times the size of the one of three years ago. Its value as a reference book and as a contribution to cardiology has been much increased. It is well worth hearty commendation.

A TEXT-BOOK OF CLINICAL NEUROLOGY. By Israel S. Wechsler, M.D., Assistant Professor of Clinical Neurology, Columbia University. Cloth. Price, $7. Pp. 725, with 127 illustrations. Philadelphia: W. B. Saunders Company, 1927.

New textbooks, particularly in the field of neurology, should be examined carefully. There is no doubt that many textbooks of great merit are to be had which cover this field adequately. Most of them are bulky, and from the standpoint of the student who is beginning the study of the subject or of the general practitioner who is searching for authoritative and adequate, yet concise, information, they are frequently complicated and tend to confuse, befog and discourage. On the other hand, attempts to remedy these defects have usually resulted in the production of sketchy and inadequate compend-like manuals. Wechsler's book avoids both extremes. It lends itself admirably to the use of the student and the general practitioner. It avoids moot points as far as possible and gives mainly what is known in the field of neurology. The signs and symptoms are traced to the underlying physiologic disturbance and thence to anatomicopathologic changes that have taken place, in all instances in which the diseases lend themselves to such analysis. Special chapters on anatomy and physiology have been omitted. The necessary anatomic and pathologic facts are discussed briefly in their relation to the clinical entities considered. Relatively few reproductions of photographs of patients appear. The illustrations are mainly diagrammatic and schematic or are from photographs of pathologic specimens. This tends to emphasize the side of the work concerned with the presentation of the pathologic changes resulting in the signs and symptoms of disease. References to the literature are not numerous, but the more useful ones are given at the end of each chapter. Psychiatric material is for the most part excluded, though there is a section dealing with the neuroses and their mental mechanisms. A chapter on psychometric tests is included. The clinical and practical features of the subject are stressed. The book can be highly recommended for the use of the medical student and the practitioner.

THE TEETH AND HEALTH. By J. Sim Wallace, D.Sc., M.D., L.D.S., Lecturer on Preventive Dentistry, King's College Hospital. Cloth. Price, 3/6 net. Pp. 214, with 5 illustrations. London: Faber & Gwyer, Ltd., 1926.

This book was probably written for the benefit of the physician, but is of value to dentists who have not given special attention to the more recent discoveries relative to the importance of proper care during the developmental period of tooth formation, both before and after birth. The author makes some interesting statements relative to food values during the time of tooth development. The results and benefits indicated lead one to believe that, by proper care, badly formed teeth may be practically eliminated. The author states that in some instances even though the mother supplies ample milk her infant does not thrive, and that when this is found it is traceable to infection in the mother's mouth and that when the infection has been removed the child at once becomes normal. In the chapter on hypoplasia of the teeth, the author states that since hypoplasia is practically never seen in the temporary set of teeth, it cannot be attributed to lack of any of the forms of vitamins, since the food of the poorer families is "devoid of fat soluble vitamins, and the water soluble vitamins B and C are present in very small amount." Hypoplasia in the permanent set is attributed to infections due to digestive disturbances and also, as generally believed, to diseases affecting the epithelium, as measles and scarlet fever. One interesting feature the author presents is the marked decrease in tooth decay in England since the World War, as compared with that found before, as the result of better oral hygiene resulting from systematic oral inspection. Other chapters, on irregularities of the teeth, prevention of caries, pyorrhea, focal sepsis and infection, and diffusion of general knowledge, follow, and are exhaustive. While the book is interesting, it is in many instances so theoretical that one desires verification before accepting it as a whole.

THE SKIN: ITS CARE AND TREATMENT. By Albert Strickler, M.D., Professor of Dermatology and Syphilology, Temple University Medical School. Cloth. Price, $1.50. Pp. 194. New York: D. Appleton & Company, 1927.

In the preface to this book on the care of the skin the author announces his intention "to recommend such simple measures as may be used, with benefit, in some of its afflictions, and to emphasize the most gratifying results obtainable in the treatment of skin diseases, especially if instituted early." The descriptions of the various diseases are so meager, however, that no layman, by this aid alone, could differentiate ringworm from circinate impetigo, or alopecia areata from microsporon infection of the scalp. The layman is likely to accept as axiomatic all statements appearing in such books. He is led to believe that no controversial statement is to be found therein. When dermatologists fail to agree on some subjects, what is the poor layman to do? In the opinion of this author, cold cream can take on the quality of a habit-forming drug in some cases: "It is best not to begin the use of creams too early, and to remember that once the constant use of creams is begun it has to be continued." After this he says that "the daily use of creams by those who are blessed with a good complexion is not beneficial but most harmful, for the reason that creams contain *wax, a harmful substance.*" After proving that creams do not penetrate the skin, the author finds experimentally that daily rubbing of the skin of laboratory animals with creams had the powerfully stimulating effect of *producing new hair follicles.* The discussion of eczema is interesting, as all forms of dermatitis of external

origin are classed as eczema. More space devoted to household and occupational dermatoses and less to the dramatization of the way "nature builds outposts throughout the affected region, so as to further fortify its position" would seem advisable. Concerning warts, the book says: "Most people still regard warts merely as blemishes and in spite of the many attempts on the part of the medical profession to educate the public to the dangers of these growths, such knowledge has not reached the masses." The reviewer knows of no such attempt on the part of the medical profession nor of any justification for such attempts. After an impassioned plea to the layman to have his warts treated before they become all-consuming basal-cell epitheliomas over night, the author urges as treatment: "Among the most efficient are *"nitric acid and caustic potash."* Are these such admirably safe agents as the layman should be advised to use? The author states on page 172 that depilatories, pumice stone, or extraction of the hair with tweezers increase the growth of hair, but on page 174 "cutting or shaving does not increase the speed of hair growth; indeed, cutting the hair makes it grow more slowly." The layman must wonder which, if either, of these statements is correct. The inconsistencies and misinformation cited make it inadvisable to recommend the book.

VEREINFACHUNG UND VERBESSERUNG DER WEST-POLYAK'SCHEN ENDONASALEN TRÄNENSACKOPERATION. Von Dr. Karl Kofler, Privatdozenten für Rhinolaryngologie in Wien, und Dr. Josef Urbanek, Assistenten der I. Universitäts-Augenklinik in Wien. Paper. Price, 3.60 marks. Pp. 63, with 12 illustrations. Berlin: S. Karger, 1927.

When a rhinologist and an ophthalmologist get their heads together, rhinogenic retrobulbar neuritis or dacryorhinocystotomy comes into the conversation as soon as the decks are cleared of social amenities. If the two are earnest and youthfully optimistic, as well as surgically inclined (and what rhinologist is not?), some modification of the West-Polyak or the Toti operation is apt to be conceived and in due course of time delivered. The accouchement is frequently a somewhat painful procedure, not for the progenitors but for the long-suffering rhino-ophthalmic world, forced to read and try the operation on the chance that it may somewhat lower the 50 per cent of failures of its predecessors. Usually the reading does not involve thirteen pretty illustrations and fifty-four pages of multipediculate sentences. The present volume includes the minutest details of thirty cases, more or less successful. As to the technical details of the operation, a careful perusal of the text is required, not once, but repeatedly.

MODERN MEDICINE: Its Theory and Practice in Original Contributions by American and Foreign Authors. Volume IV. Diseases of the Respiratory System—Diseases of the Circulatory System. Edited by Sir William Osler, Bart., M.D., F.R.S. Third edition, revised and reedited by Thomas McCrae, M.D., Professor of Medicine in the Jefferson Medical College, Philadelphia, assisted by Elmer H. Funk, M.D., Assistant Professor of Medicine, Jefferson Medical College, Phialdelphia. Cloth. Price, $9. Pp. 1011, with illustrations. Philadelphia: Lea & Febiger, 1927.

The volume is in two parts, the first of which deals with diseases of the respiratory tract and the second with diseases of the circulatory system. The section on diseases of the respiratory tract opens with an enlightening chapter on the physiology of respiration. Other chapters take up everything that a practitioner of medicine ought to know about diseases of all parts of the respiratory tract, except pulmonary tuberculosis. This subject is not included in this volume. The material is up to date. Hypersensitiveness is discussed at length, artificial pneumothorax is described, and there is a short section on destructive gases in the World War. The second part, on diseases of the circulatory system, also opens with a chapter on general considerations. The rate and mechanism of the heart beat are discussed by Sir Thomas Lewis and include an explanation of electrocardiography. The short section on surgical treatment of angina pectoris gives a good indication of the doubt that still attaches to its efficacy. In the chapter on congenital cardiac disease, a thorough discussion of the development of the heart aids in grasping the significance of the different defects, which are listed and discussed. Arteriosclerosis is given space proportionate with its present importance, and the section closes with a chapter on diseases of the lymphatic vessels.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are supplied on request.

REAGENZIEN UND NÄHRBÖDEN. Eine Zusammenstellung der wichtigsten und zweckmässigsten Vorschriften für die Laboratoriumspraxis. Von Dr. phil. E. Böhm, Apotheker und Chemiker, und Dr. phil. K. R. Dietrich, Apotheker und Chemiker. Cloth. Price, 18 marks. Pp. 375. Berlin: Urban & Schwarzenberg, 1927.

Exceedingly practical collection of formulas of reagents, stains and culture mediums.

OUTLINES IN HEALTH EDUCATION FOR WOMEN. By Gertrude Bilhuber, D.P.H., Associate Professor of Physical Education for Women, Purdue University, and Idabelle Post, B.S., Instructor in Physical Education for Women, Purdue University. Cloth. Price, $2. Pp. 192, with 32 illustrations. New York: A. S. Barnes & Company, 1927.

Practical outlines for teachers of health providing briefly much valuable information.

THE TIBETAN BOOK OF THE DEAD, OR THE AFTER-DEATH EXPERIENCES ON THE BARDO PLANE, ACCORDING TO LĀMA KAZI DAWA-SAMDUP'S ENGLISH RENDERING. By W. Y. Evans-Wentz, M.A., D.Litt., B.Sc. With a foreword by Sir John Woodroffe. Cloth. Price, $5.50. Pp. 248, with 2 illustrations. New York: Oxford University Press, 1927.

Views of a Tibetan sage as to the hereafter.

SURGICAL DISEASES OF THE GALL-BLADDER, LIVER AND PANCREAS AND THEIR TREATMENT. By Moses Behrend, A.M., M.D., F.A.C.S., Attending Surgeon to the Jewish and Mt. Sinai and Northern Liberties Hospitals. Cloth. Price, $4 net. Pp. 278, with illustrations. Philadelphia: F. A. Davis Company, 1927.

Monographic presentation adequately illustrated.

MENTAL HANDICAPS IN GOLF. By Theo. B. Hyslop, M.D., F.R.S.E. With forewords by Rolf Creasy, M.R.C.S., L.R.C.P., Hon. Sec. Medical Golfing Society, and John Henry Taylor. Cloth. Price, $1.50. Pp. 112. Baltimore: Williams & Wilkins Company, 1927.

An eminent neurologist discourses fluently of slices and why they grow.

THE ANTISTERILITY VITAMINE FAT SOLUBLE E. By Herbert McLean Evans, and George O. Burr, with the assistance of Theodore L. Althausen. Memoirs of the University of California, volume 8. Paper. Price, $5. Pp. 176, with 12 plates. Berkeley: University of California Press, 1927.

Collected studies, some of which have appeared in THE JOURNAL.

MY BELIEFS. By Luther Burbank. First and memorial edition, limited to one thousand copies. Cloth. Price, $1. Pp. 77, with 3 illustrations. New York: Avondale Press, Inc., 1927.

Mr. Burbank's credo—a thousand words in big type with a cover.

MEINE MYELOGENETISCHE HIRNLEHRE, MIT BIOGRAPHISCHER EINLEITUNG. Von Paul Flechsig. Paper. Price, 6.90 marks. Pp. 122, with one illustration. Berlin: Julius Springer, 1927.

Monograph presenting author's conception of brain development.

THIS WAY OUT. By Edward G. Ivins. Cloth. Price, $1.50. Pp. 114. New York: Avondale Press, 1927.

Somewhat mediocre poems on varied subjects.

FORTY-FIFTH ANNUAL REPORT OF THE STATE DEPARTMENT OF HEALTH OF THE STATE OF NEW YORK FOR THE YEAR ENDING DECEMBER 31, 1924. Volume II. Division of Vital Statistics. Paper. Pp. 327. Albany, 1927.

ON THE STATE OF THE PUBLIC HEALTH. Annual Report of the Chief Medical Officer of the Ministry of Health for the Year 1926. Paper. Price, 3s. net. Pp. 281. London: His Majesty's Stationery Office, 1927.

MILBANK MEMORIAL FUND. Report for the year ended December 31, 1926, with an account of the New York health demonstrations. Paper. Pp. 139, with illustrations. New York, 1927.

TRANSACTIONS OF THE ONE HUNDRED AND THIRTY-FIFTH ANNUAL MEETING OF THE NEW HAMPSHIRE MEDICAL SOCIETY, 1926. Cloth. Pp. 266, with illustrations. Concord, 1927.

RAPPOR ANNUEL DE L'INGENIEUR CHARGE DU SERVICE NATIONAL D'HYGIENE PUBLIQUE. Republique d'Haiti, 1925-1926. Paper. Pp. 167, with illustrations. Port au Prince, 1926.

NINTH ANNUAL REPORT OF THE NATIONAL COUNCIL FOR THE UNMARRIED MOTHER AND HER CHILD, 1927. Paper. Price, sixpence. Pp. 24. London, 1927.

Medicolegal

Liability for Physicians' and Hospital Bills

(American Sash & Door Co. v. Industrial Commission et al. (Ill.), 156 N. E. R. 776)

The Supreme Court of Illinois says that paragraph *a* of section 8 of the workmen's compensation act of that state provides that the employer shall provide the necessary first aid, medical and surgical services, and all necessary hospital services during the period for which compensation may be payable; also all necessary medical and surgical services for a period not longer than eight weeks not to exceed, however, an amount of $200, and in addition such medical or surgical services in excess of such limit as may be necessary during the time such hospital services are furnished. All the foregoing services shall be limited to those which are reasonably required to cure and relieve from the effects of the injury. The employee may elect to secure his own physician, surgeon or hospital services at his own expense.

The foregoing statute requires the employer, and not the insurer of the employer, to provide the necessary first aid, medical and surgical services, etc. The employer may direct his employee, when accidentally injured, to employ his insurer's physician or surgeon when he is notified that the employee needs or requires such services. The record in this case showed that the employer did specifically direct the injured employee to employ the physician whom the employee had first called to examine him. The court and the industrial commission were also justified in finding from the evidence that the president of the company which was the employer in this case never gave any direction to the injured employee as to the employment of a physician and surgeon other than the one whom the employee first called; that the president was duly informed that the employee was removed from his home to a certain hospital; that for three weeks or more the president was asked to pay the medical, surgical and hospital bills, etc., and that all he did in response to such calls for payment was to mail the bills to the insurance company. He therefore waived his privilege of insisting that his company was not responsible for the services of the physician mentioned and for all bills made at the hospital that were necessary to a recovery of the injured employee. The liability of the insurance company was not in question in this suit. The employer was liable for all these services, because its president specifically directed the injured employee to employ the physician mentioned and made no objection to the employee's removal to the hospital and treatment there, or to the bills rendered for such services. An employer is liable to his employee under such circumstances as were shown in this record when he or it directs the employee to employ his own physician to have his accidental injuries treated and cured, or when he or it absolutely refuses, when notified, to furnish medical and surgical aid and treatment or to pay for it.

After this injured employee was removed from the hospital mentioned to his home he was then removed to another hospital without any direction from his physician or of his employer, and there received treatment and services. For this reason the court thinks that the employee made his election to accept such services and was liable for them.

Treatment of a Few Patients Not Continuous Practice

(State ex rel. Kriedeman v. Upham et al. (Ohio), 157, N. E. R. 20)

The Supreme Court of Ohio, in affirming a judgment which denied a writ of mandamus in this case and one of State ex rel. Schelosky, which was heard and decided with it, says that it was sought to compel the state medical board to issue to the relators certificates for the limited practice of medicine and surgery as chiropractics, under and by virtue of section 1274—2, general code. In the Kriedeman case it was shown by the depositions of Kriedeman, his wife, and certain witnesses who had been his patients, that he had practiced to some extent during the five-year period immediately preceding Oct. 1, 1915, but it did not appear that he had had many patients, but on the contrary was engaged as motorman and part-time conductor during the early part of that period. Schelosky was employed in a factory as economic engineer and master mechanic from 1905 until 1915, and during that time had had 180 different patients. The state medical board having considered the evidence offered by each of these relators, and having refused to issue certificates without examination, the powers and duties of the courts in relation to the matter presented questions which were not of first impressions in this cause. The questions were in all respects similar to those which were considered and decided in *State ex rel. Copeland v. State Medical Board,* 107 Ohio St. 20, 140 N. E. 660. It was decided in that case that the medical board has a large measure of discretion, and that, before it can be required by the writ of mandamus to dispense with the preliminary examination of an applicant, the applicant must "establish to the satisfaction of the state medical board the fact of having actually practiced those limited branches for the full period of five years continuously, prior to October 1, 1915." It would be absurd to claim that treatment of a very few patients during a period of five years would constitute a continuous practice during that period. On the other hand, it would be unreasonable and an abuse of discretion on the part of the board to refuse a certificate in a case in which the applicant had devoted his entire time to the practice of his profession and had treated many thousands of patients during that period. Between those limits the board must be held to have a discretion which the courts may not control. The practice of these relators was certainly very meager during that five-year period, and it is absolutely certain that they had not been legally practicing their profession since the effective date of section 1274—2, general code (106 O. L. 202). On the principles and for the reasons declared in the Copeland case, the judgment of the court of appeals denying the writ of mandamus must be affirmed.

Death After Refusal to Submit to Amputation of Leg

(Utah Copper Co. v. Industrial Commission et al. (Utah), 256 Pac. R. 397)

The Supreme Court of Utah, in affirming an award of the industrial commission of $1,000 for the partially dependent mother of an employee who on Nov. 21, 1924, suffered a compound fracture of both bones of his right leg just above the ankle, with extensive lacerations, says that infection set in and, between November 24 and December 24, five physicians advised him that amputation was necessary to save his life. He refused to submit to the operation until December 31, when preparations were immediately made for the operation, but the employee died while on the way to the operating room, from general and systemic infection. Unless his refusal to submit promptly to the amputation of his leg operated to introduce a new and independent cause of death, there was no difficulty on the facts here in attributing his death to the accident. So the question was confined to whether, under all the facts and circumstances, the refusal broke the chain of causation between the accident and the death, and became as a matter of law the proximate cause of the death.

At the hearing it was stipulated by the parties that the physicians who had attended the employee would, if called, testify, among other facts and circumstances, that his refusal to submit to the operation "was unreasonable, as such operation, under the circumstances, was one of which any reasonably prudent man would have taken advantage, and his death could have been averted by the operation, and his death was the direct and proximate result of his refusal to submit to such operation, which operation was necessitated by the spreading of the infection which set up following the injury." It was asserted that this stipulation, together with the similar matter contained in the commission's conclusions, established conclusively that the refusal was unreasonable and the proximate cause of death. Not so. The questions of reasonableness and proximate cause constituted the very matter to be tried, and were not subjects on which expert witnesses might properly express opinions. These were the ultimate questions of facts for the triers of facts to decide on the evidence.

It may be stated as a general proposition that an injured workman will be denied compensation for incapacity which may be removed or modified by an operation of a simple character, not involving serious suffering or danger, to which he unreasonably refuses to submit. The type of case in which

the rule is applied to defeat compensation is generally where the injured employee himself is claiming compensation for disability which can be modified or corrected by a simple or minor surgical operation, which he refuses to have performed. It is not always easy to determine whether a particular case is within the rule or not. The essence of the rule is that an employee must not aggravate or prolong his injury or incapacity by his own unreasonable or arbitrary conduct. But what is unreasonable and arbitrary depends on the circumstances of each particular case. When he is confronted with submitting to a serious or what is called a major operation, one involving danger to his health or life, the injured employee has a legal and moral right of election.

This court is well satisfied that the circumstances of the case before it did not justify denial of compensation because of the delay in consenting to the amputation. The operation was serious and involved, not the risk, but the certainty, of losing the workman's leg. That his refusal to submit promptly was not arbitrary or wilful was attested by his final consent to the amputation. While his reason for refusing did not appear in evidence, it is easily presumed that a workman would hesitate long and hazard much before consenting to the loss of a leg. He could have had no mercenary motive. His compensation in case of a successful amputation and recovery would have been more than double that to which his partially dependent mother was entitled on his death. Of course, he erred in his judgment; his life might have been saved. But in his emergency, to say that he acted wilfully or arbitrarily or unreasonably would be applying a stricter standard than is found in the statement of the rule of law relating to the subject, and one which no reported case supports. The circumstances here were clearly such as to take the case, not only out of the letter, but also out of the spirit and reason, of the rule which defeats compensation on account of the refusal of the injured employee to submit to treatment or remedial measures for his injury.

Use Expert May Make of Carlisle Table of Mortality

(Auer v. Sinclair Refining Co. et al. (N. J.), 137 Atl. R. 555)

The Court of Errors and Appeals of New Jersey holds that, in a damage suit at law, an expert witness may make use of the Carlisle table of mortality for the purpose of showing the average expectancy of human life, or the present value of the alleged loss of income based on that expectancy, when such matters are factors in the appraisal of damages. The general rule is that, while the Carlisle table of mortality is evidential, irrespective of the condition of health of the person whose expectancy of life is the subject of the inquiry, yet that condition of health must be taken into account in determining the probable duration of such person's life.

Liability for Death from Tetanus After Appendectomy

(Woodlawn Infirmary, Inc., et al. v. Byers (Ala.), 112 So. R. 831)

The Supreme Court of Alabama, in reversing a judgment obtained by plaintiff Byers and remanding the cause for another trial, says that the plaintiff's minor daughter underwent an appendectomy at the defendant infirmary and subsequent thereto developed tetanus, from which disease she died. The plaintiff sued the infirmary and the physician or surgeon by and through whom the infirmary undertook to treat patients and who performed the appendectomy, the plaintiff alleging that the death of his daughter, for which he sought to recover damages, was produced by a want of reasonable care, skill and diligence in her treatment. The defendants offered no proof.

The plaintiff's daughter was a patient both of the infirmary and of the physician, the latter having the management and control of the former, its alter ego, as it were. The rule is recognized in Alabama that the burden of proof is not shifted from the plaintiff by showing that an unsuccessful result has attended the treatment of the patient by the physician. The doctrine of res ipsa loquitur (the thing speaks for itself) does not apply to the mere fact of a blood infection, however closely, in temporal sequence, it may follow a medical treatment. A civil action for malpractice against a physician and surgeon may be sustained on proof of a failure to exercise reasonable care, diligence and skill in respect to the duty so assumed and undertaken as physician and surgeon—such care and skill as physicians and surgeons in the same general neighborhood, pursuing the same general line of practice, ordinarily employ and exercise in a like case.

The plaintiff's evidence tended to show concurrent negligence of the defendants, that is, as to the infirmary negligence as to the matter of cleanliness of the floor and the method of sweeping with a broom, causing dust, rather than the use of mops (as shown to be in use in hospitals generally), improper sterilization of instruments, and insufficient heating of the rooms in which the plaintiff's daughter was, and improper care of the wound following the operation, together with a lack of necessary serum when needed in her case. The jury, from the evidence, might reasonably infer that the major portion of these deficiencies were known to the defendant physician, who was in control of the infirmary, and who, so far as the proof showed, took no steps to remedy them. It would seem that the proof also was sufficient for submission to the jury of the question as to whether or not there was unreasonable delay in the ascertainment of the condition of the plaintiff's daughter as to tetanus, and whether or not the known remedies were applied with sufficient diligence and promptness. The evidence that the floors were dirty, swept with a broom, thus producing dust, and that the room was cold and uncomfortable was properly admitted. There being evidence sufficient for the jury to infer that a physician who assisted the defendant physician in the operation and who took the latter's place in his absence was in fact the agent of both defendants, his statement, made while acting in the line and course of his duties, as to a lack of serum in the infirmary when needed, was properly admitted. It was also competent to show that at the same infirmary another patient died of tetanus just a few days before the death of the plaintiff's daughter. That evidence was admissible in view of the contagious and infectious character of the disease, but should not be further extended to serve a double purpose of comparison with other infirmaries. Proof as to the matter of such collateral inquiry would open wide the door to speculation and conjecture, and if to be met by the defendants would require much inquiry into these collateral issues.

The plaintiff was allowed to show from the cards of the health department of the city, and by the testimony of the statistical clerk of that department, that in the entire city during ten months of the year in which the plaintiff's daughter died there were only three deaths from tetanus among the white population, and that two of these were in the defendant infirmary. This was a collateral inquiry, and no effort was made to show similar conditions as to patients or otherwise. The injury did not involve a matter of knowledge or intent, and did not come within any of the recognized exceptions to the rule as to the inadmissibility of collateral facts. By this proof a comparison (unfavorable to the defendants) was drawn between the defendant infirmary and its physician and all other infirmaries and physicians in the city for a period of ten months. It showed, as argued by counsel for the plaintiff in the court below, that tetanus is a rare disease, but that of only three cases in the city during that period, two were at the defendant infirmary. That the evidence was of a highly prejudicial character admits of no serious doubt, and its admission must result in a reversal of the cause.

* * *

Society Proceedings

COMING MEETINGS

District of Columbia, Medical Society of, Washington, January 4. Dr. C. B. Conklin, 1718 M Street, N.W., Washington, D. C., Secretary.

Philippine Islands Medical Association, Manila, December 14-17. Dr. A. S. Fernando, College of Medicine, University of the Philippines, Manila, Secretary.

Radiological Society of North America, New Orleans, November 28-December 2. Dr. Robert J. May, 5005 Euclid Avenue, Cleveland, Secretary.

Society of American Bacteriologists, Rochester, N. Y., December 28-30. Dr. J. M. Sherman, Dairy Industry Building, Ithaca, Secretary.

Southern Surgical Association, Augusta, Ga., December 13-15. Dr. R. L. Payne, Medical Arts Building, Norfolk, Va., Secretary.

Western Surgical Association, Omaha, December 8-9. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in America for a period of three days. No foreign journals are available prior to 1921, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

7: 515-661 (Sept.) 1927

*Action of Large Doses of Pneumococcus Antiserum in Mice. F. A. Coventry, Chicago.—p. 515.

Study of Certain Organisms of Pasteurella Group with Respect to Specific Complement Fixation by Icebox Method. R. B. Lal, Baltimore.—p. 561.

Brazilian Mosquitoes. F. M. Root, Baltimore.—p. 574.

*Rural Outbreak of Cholera. H. Lara, Manila.—p. 606.

*Heparin Inhibition of Anaphylactic Shock. R. R. Hyde, Baltimore.—p. 614.

Complement Deficient Guinea-Pig: Inherited Biochemical Structure in Relation to Toxic Immune Body. R. R. Hyde, Baltimore.—p. 619.

Respiratory Immunity in Rabbits: II. Intranasal Infection and Immunization with Pneumococci. C. G. Bull and C. M. McKee, Baltimore.—p. 627.

Effect of Changes in Sugar Content of Blood on Bird Malaria. M. S. MacDougall, Baltimore.—p. 635.

Method for Determining Antipneumococcal Properties of Whole Blood and Protective Power of Immune Serum. C. G. Bull and S. M. Tao, Baltimore.—p. 648.

Effect of Pneumococcus Antiserum.—In a long series of gradually increasing doses of whole or concentrated pneumococcus antiserum (from 0.01 to 3.0 cc. per twenty grams of mouse) and varying, but smaller, doses of organisms (from 1 to 10 million minimal lethal dose) in either protective or curative experiments, Coventry says, the serum was effective in virtually all cases.

Rural Outbreak of Cholera.—An account is given by Lara of an outbreak of cholera occurring in a rural community in the Philippines. The cases were due to the infection of a spring used for drinking. The case fatality was exceptionally high, comprising twenty-three or twenty-five patients. Of the twenty-five patients, twenty-four gave a history of previous inoculation with anticholera vaccine, twenty-three less than four months previously. Eighteen of these, however, had received only one dose.

Heparin and Anaphylactic Shock.—In Hyde's work intravenous injections of heparin, in amounts sufficient to inhibit the coagulation of the total blood volume of a guinea-pig, do not inhibit a fatal issue in the anaphylactic guinea-pig. Neither does heparin inhibit the primary toxicity death in guinea-pigs that follows intravenous injections of fresh ox serum, immune heterophile serum or histamine.

American J. Obst. & Gynec., St. Louis

14: 277-416 (Sept.) 1927

Responsibility of Obstetric Teacher in Relation to Maternal Mortality and Morbidity. B. P. Watson, New York.—p. 277.

*Undescribed Type of Premature Separation of Normally Implanted Placenta. J. Hofbauer, Baltimore.—p. 286.

*Amniotic Fluid as Possible Factor in Etiology of Eclampsia. M. R. Warden, Warm Springs, Mont.—p. 292.

Liver Function in Pregnancy. I. A. Siegel, Baltimore.—p. 300.

*Diabetes Mellitus and Pregnancy. H. J. Stander and C. H. Peckham, Montreal.—p. 313.

Blood Cholesterol in Women. I. Rosen and F. Krasnow, New York.—p. 321.

*Cure of Chronic Gonorrhea in Female by Means of Single Subcutaneous Injection of Live Gonococci. A. Loeser, Berlin.—p. 329.

*Fibromyoma and Pregnancy. R. N. Pierson, New York.—p. 333.

Periodicity of Sex Desire: II. Married Women. K. B. Davis, New York.—p. 345.

Disadvantages of Prolonged Period of Postpartum Rest in Bed. H. J. Epstein and A. J. Fleischer, New York.—p. 360.

Differential Diagnosis of Right-Sided Abdominal Pain. U. Maes, New Orleans.—p. 364.

Tracheloplasty Versus Tracheloplastering. M. O. Magid, New York.—p. 371.

Uterus Duplex Unicollis. W. T. Dannreuther, New York.—p. 376.

Fetal Sexual Anomaly. N. L. Thompson and J. W. Bell, Everett, Wash.—p. 379.

Sarcoma of Rectovaginal Septum. O. A. Gordon, Jr., New York.—p. 382.

Fibromyoma of Cervix: Case. P. J. Reel, Columbus, Ohio.—p. 386.

Premature Separation of Placenta.—Hofbauer reports a case of profuse concealed hemorrhage (600 cc.) derived from a very small area of separation (20 by 5 mm.) of the normally implanted placenta.

Amniotic Fluid and Eclampsia.—In a series of ten female rabbits given intravenous injections of preparations of the amniotic fluid of another rabbit, three had convulsive seizures and died. The others did not develop any symptoms recognizable by observation. The death of two of the animals appeared to be due to pulmonary embolism resulting from the epithelial cells contained in the fluid injected. The other animal received fluid presumably free from emboli. The cause of its death remains undetermined. Warden suggests that human amniotic fluid may contain an abundance of material which, if injected into the blood stream, could produce embolism. The theory is suggested that eclampsia may be due to the sudden accidental injection of a considerable amount of amniotic fluid into the maternal blood stream.

Diabetes Mellitus and Pregnancy.—Metabolism studies, made by Stander and Peckham on three patients who suffered from diabetes during repeated and consecutive pregnancies, as well as on a mild diabetes patient in a single pregnancy, showed that the diabetic woman may undergo a change for the better during the second half of pregnancy. This improvement may be due to the action of fetal pancreatic hormone, to an excessive utilization of maternal carbohydrate by the fetus, or to some as yet unknown change in the maternal carbohydrate metabolism which takes place in the latter stages of gravidity. Under careful hospital supervision of the diet, with frequent urine and blood analyses, and with insulin treatment if necessary, the diabetic patient may often go to term and be delivered successfully of a living child, without aggravation of the diabetic condition or, indeed, with a temporary disappearance of all symptoms during a part of the period of lactation. In patients with diabetes mellitus the first half of pregnancy appears to be the precarious period for the fetus, and without any benefit to the mother. The excessive size of children born of diabetic mothers is probably due to the increased supply of maternal blood sugar, as the fetus undoubtedly makes a heavy demand on the maternal carbohydrates not only for its sugar requirements but also in order to build its fat and to supply its own energy.

Injection of Live Gonococci to Cure Gonorrhea.—The method described by Loeser is applied in the following manner: From the pus of a patient, male or female, with acute gonorrhea, a pure culture is made on ascites-blood agar (half and half). It is important for the therapeutic efficacy that the gonococci be isolated quickly and pass back into the human body after from twenty-four to forty-eight hours on the artificial medium. The longer they live on the culture medium, the more they lose their therapeutic efficiency. The germs, grown in this manner on ascites-blood agar in a long serpentine line, are washed off in 3 cc. of physiologic sodium chloride solution. This suspension is taken up in a syringe, and from 0.5 to 1 cc. of it is injected subcutaneously into the upper arm. One culture tube, as a rule, will suffice for three patients. Cure, i. e., the complete disappearance of all gonococci, usually is achieved within from eight to fourteen days after the injection. Loeser has treated 118 women suffering from chronic gonorrheal processes with the injection of live gonococci. Of these, sixty-eight were cured with a single injection and five others with two and three injections, respectively. They all had been unsuccessfully treated in various ways, either with vaccines or locally.

Fibromyomas and Pregnancy.—The incidence of clinically important fibromyomas in the cases analyzed by Pierson, 191 in 30,836 consecutive pregnancies, was 0.6 per cent, of which 15 per cent were in the pelvis. Spontaneous abortion or premature labor occurred in 24.1 per cent of the cases. Major operative intervention was necessary because of the fibromyomas in forty-two of the 191 cases. It was necessary

in 73 per cent of thirty pelvic cases. The gross maternal mortality was 3.2 per cent. The mortality due to obstetric causes was 2.08 per cent. The gross fetal mortality was 35.6 per cent. The mortality for cases in which the fibromyomas were probably responsible was 20.7 per cent. Prematurity was the chief cause of fetal death.

American Journal of Physiology, Baltimore

82: 1-215 (Sept. 1) 1927

Studies on Vigor: IX. Ergographic Studies on Suprarenalectomized Animals. H. M. Gans and H. H. Miley, Columbus, Ohio.—p. 1.

Id.: X. Effects of Ovarian Extirpation on Fatigability of Muscle in Rat. H. H. Miley, Columbus, Ohio.—p. 7.

Id.: XI. Relation of Hysterectomy to Voluntary Activity in White Rat. E. P. Durrant, Columbus, Ohio.—p. 14.

Failure of Histamine to Induce Estrous Changes in Spayed Rats. P. M. Levin, New York.—p. 19.

*Existence of Parathyroid Hormone. F. T. Jung, Chicago.—p. 22.

*Physiology of Pancreas: III. Hormone for External Pancreatic Secretion. A. C. Ivy, J. I. Farrell and H. C. Lueth, Chicago.—p. 27.

*Effect of Pericardium on Cardiac Distention. J. A. Wilson and W. J. Meek, Madison, Wis.—p. 34.

Bulbospinal Reflexes in Dogs and Cats Under Barbital Anesthesia. J. F. Pearcy and M. M. Weaver, West Virginia.—p. 47.

Reflexes of Puppies in First Six Weeks After Birth. A. M. Bahrs, Berkeley-San Francisco.—p. 51.

Visceral Nervous System: Reflexes from Gastro-Intestinal Tract to Eye. J. F. Pearcy and T. D. Allen, Chicago.—p. 56.

*Absorption from Serous Cavities: VI. Effect of Ligation of Mediastinal Lymphatics. R. S. Cunningham, Nashville, Tenn.—p. 59.

Oscillatory Variations in Contractions of Rhythmically Stimulated Muscle. W. B. Cannon and J. R. Pereira, Boston.—p. 63.

Physiologic Maximum Heart Rate as Artefact. W. B. Cannon and J. T. Lewis, Boston.—p. 67.

Knee Jerk: I. Apparatus for Estimation. C. A. Johnson, Chicago. —p. 75.

*Rôle of Hypophysis in Initiation of Labor. H. B. van Dyke and A. Kraft, Chicago.—p. 84.

*High Systemic Blood Pressures on Right Ventricle and Pulmonary Circuit. L. N. Katz and C. J. Wiggers, Cleveland.—p. 91.

Reflex Time of Knee Jerk and Achilles Jerk. W. W. Tuttle, L. E. Travis and T. A. Hunter, Iowa City.—p. 99.

*Pancreatic Secretin in Gastro-Intestinal Tract. M. M. Weaver, West Virginia.—p. 106.

Roentgenologic Study of Gastric Hunger Motility in Healthy Men. F. T. Rogers and C. L. Martin, Dallas, Texas.—p. 113.

Exhaustion Due to Lack of Sleep: I. T. H. Bast and A. S. Loevenhart, Madison, Wis.—p. 121.

Id.: II. Symptomatology. C. Leake, J. A. Grab and M. J. Senn, Madison, Wis.—p. 127.

*Id.: III. Effect on Nerve Cells of Spinal Cord. T. H. Bast, F. Schacht and H. Vanderkamp, Madison, Wis.—p. 131.

Id.: IV. Effect on Nerve Cells in Medulla. T. H. Bast and W. B. Bloemendal, Madison, Wis.—p. 140.

Extent of Knee Jerk and Achilles Jerk. W. W. Tuttle and L. E. Travis, Iowa City.—p. 147.

Study of Constituents of Sweat, Urine and Blood; Gastric Acidity and Other Manifestations Resulting from Sweating: III. Urea. G. A. Talbert, J. R. Finkle and S. S. Katsuki, University, N. D.—p. 153.

Recovery of Contractility After Contraction in Cardiac Muscle. H. F. Blum, Berkeley-San Francisco.—p. 157.

Regulation of Respiration: X. Effects of Carbon Dioxide, Sodium Bicarbonate and Sodium Carbonate on Carotid and Femoral Flow of Blood. D. W. Bronk and R. Gesell, Ann Arbor, Mich.—p. 170.

Theory of Muscle Contraction with Roentgen-Ray Diffraction Patterns from Relaxed and Contracted Muscles. J. H. Clark, Boston.—p. 181.

Metabolism: VI. Experimental Hyperthyroidism. M. M. Kunde, Chicago.—p. 195.

Existence of Parathyroid Hormone.—From his experiments on the transplantation of parathyroid glands, Jung concludes that the parathyroids contain a store of a hormone which is not species-specific, nor a chemical artifact, nor contained in the control tissues used.

External Pancreas Hormone.—Experimental results lead Ivy et al. to the belief that acid causes the intestinal mucosa to give off a hormone for external pancreatic secretion.

Effect of Pericardium on Cardiac Distention.—Wilson and Meek state that in the dog, an apparent restraining action of the pericardium at low venous pressures (from —4 to 0 cm. of water) is due to the tonus of the diaphragm affecting the heart through the pericardiodiaphragmatic attachments. With these attachments severed, the uncomplicated restraint exerted by the pericardium on diastolic heart size is first noticed at a venous pressure of 0 cm. of water. This restraint increases gradually until the heart fills the pericardium, and then becomes more and more apparent the further venous pressure is elevated. At a venous pressure of about 8 cm. of water, or at an effective venous pressure of 15 or 16 cm. of water, the dog's heart completely fills the pericardium.

Absorption from Serous Cavities.—It has been found by Cunningham that obstruction of the lymphatic drainage of the diaphragm has no effect on the absorption of isotonic solutions from the peritoneal cavity, and therefore indicates that the absorption of such solutions takes place through the blood vascular system.

Rôle of Hypophysis in Initiation of Labor.—Cerebrospinal fluids obtained by van Dyke and Kraft from women during pregnancy, and during the second to sixth hour of labor, when tested on the isolated guinea-pig uterus appeared to contain about the same amounts of oxytocic substance. That no increase was found speaks against the theory of Dixon and Marshall as to the interaction of the ovary and the hypophysis in terminating normal pregnancy. The oxytocic substance does not seem to be an histamine-like body. The absolute amounts of oxytocic substance in human and dog cerebrospinal fluids are of about the same magnitude as those determined by Trendelenburg and by Miura in animals, but much less than the concentrations recorded by Dixon as occurring in the dog.

High Systemic Blood Pressures.—Experiments made by Katz and Wiggers confirm the interpretation of Anrep and Bulatao that changes in pulmonary arterial pressures result from changes in the contraction of right ventricular systole, and are not due to "back pressure effects." Their results emphasize the fact, however, that in the intact circulation the changes are so slight that it requires sensitive forms of apparatus to detect their existence. The results obtained from heart-lung preparations can, therefore, not be transferred to the intact animal.

Pancreatic Secretion in Gastro-Intestinal Tract.—Pancreatic secretion as extracted by simple washing of the tissue with 0.4 per cent hydrochloric acid was found by Weaver only in the gastro-intestinal tract. It occurred principally in the duodenum and then in rapidly decreasing quantities down the small intestine, being absent or nearly so from the last fifth of the small intestine and entirely absent from the colon-rectum. These statements apply to the dog, which was the animal used for the investigation. There may be found small quantities of this substance (pancreatic secretion) in the stomach mucosa, occurring principally in the mucosa of the pyloric antrum. The pancreas has been shown to respond to direct injection of vasodilation-free secretin.

Effect of Exhaustion on Spinal Nerve Cells.—As a result of extreme exhaustion from lack of sleep, the following histologic changes were observed by Bast et al. in the nerve cells of the spinal cord: (1) a decrease in the chromatin material of the nuclei; (2) chromatolysis characterized by: (*a*) granular Nissl bodies or a diffuse granulation throughout the cytoplasm; (*b*) the presence of vacuoles in the cytoplasm, and (3) vacuolation, usually found in a zone midway between the cell wall and the nucleus.

American J. Roentgenol. & Rad. Therapy, New York

18: 203-300 (Sept.) 1927

Bone Metastasis in Thyroid Tumors. S. Ginsburg, New York.—p. 203.

*Endothelial Myeloma (Ewing's Tumor). L. K. Sycamore and G. W. Holmes, Boston.—p. 223.

Primary Carcinoma of Lung Showing Both Atelectasis and Pleural Effusion. K. Kornblum, Philadelphia.—p. 230.

Roentgenologic Aspects of Primary Tumors of Lung. T. L. Hyde and G. W. Holmes, Boston.—p. 235.

*Importance of Pelvic Roentgenogram in Treatment of Mammary Cancer. A. J. Bendick, New York.—p. 244.

Tumor of Undetermined Origin in Liver. H. H. Fellows, R. G. Stillman and J. C. Howard, New York.—p. 246.

Relative Values of Cholecystography and Gastro-Intestinal Series in Diagnosis of Cholecystitis. J. D. Lawson, Woodland, Calif.—p. 249.

Ventriculography. F. C. Grant, Philadelphia.—p. 264.

Endothelial Myeloma.—The diagnosis made at necropsy in the case cited by Sycamore and Holmes was (1) metastatic osteogenic sarcoma of the lungs, bronchial lymph glands and paravertebral and retroperitoneal tissue; (2) acute pericarditis. The primary tumors were in the ulna and femur.

Roentgenotherapy of the chest tumor gave much relief from symptoms.

Pelvic Roentgenograms in Breast Cancer.—Bendick states that no patient should have a mastectomy for carcinoma unless pelvic and chest roentgenograms have first been made to determine the presence or absence of metastases.

American J. Surgery, New York

3: 99-208 (Aug.) 1927

Lister's Centenary. L. L. Hill, Montgomery, Ala.—p. 99.
Gastric Sarcoma. C. G. Cumston, Geneva, Switzerland.—p. 111.
Fracture of Spine. S. W. Boorstein, New York.—p. 116.
Orthopedic Methods of Sweden. E. D. Hauser, Rochester, Minn.—p. 126.
Removal of Wrinkles of Face and Neck. M. Lagarde, Paris.—p. 132.
Importance of Strict Operating Room Control. S. Leigh, Norfolk, Va. —p. 139.
Anal and Rectal Polyps as Precancerous Growths. B. H. Beeler, Evansville, Ind.—p. 142.
Technic of Cholecystectomy. G. S. Foster, Manchester, N. H.—p. 144.
Retractor for Gallbladder and Biliary Surgery. W. L. Wolfson, New York.—p. 146.
Calcified Intervertebral Disk: Case. H. Lusskin, New York.—p. 148.

American Rev. Tuberculosis, Baltimore

16: 245-358 (Sept.) 1927

Interpretation of Clinical Pulmonary Tuberculosis in Terms of Allergy. F. M. Pottenger, Monrovia, Calif.—p. 245.
*Primary Complex in Adult with Focal Tuberculin Reaction in Tracheobronchial Lymph Nodes. I. Rappaport and R. T. Ellison, Philadelphia. —p. 256.
*Ether Anesthesia in Pulmonary Tuberculosis. C. R. Grandy, Norfolk, Va.—p. 262.
Treatment of Pulmonary Tuberculosis with Sanocrysin. G. Gruenfeld, Denver.—p. 266.
Chemical Urinary Studies on Patients with Pulmonary Tuberculosis Under Sanocrysin Treatment. K. L. McCluskey and L. Eichelberger, Chicago.—p. 273.
Endothelial Permeability Following Injections of Sanocrysin. S. A. Levinson, W. F. Petersen and G. Milles, Chicago.—p. 285.
*Isolation of Tubercle Bacilli from Contaminated Tuberculous Materials. H. J. Corper and N. Uyei, Denver.—p. 299.
Investigation of Filtrable Forms of Tubercle Bacillus and of Protective Substances in Filtrates. C. Floyd and M. C. Herrick, Boston.—p. 323.
*Bacterial Etiology of Tuberculosis: Nonacid-Fast Micro-Organisms from Tuberculous Sputum. F. M. Duffy, Omaha.—p. 330.
*Red Cell Sedimentation Test in Children. E. M. Greisheimer et al., Minneapolis.—p. 344.
Manometer Readings and Actual Pressures in Artificial Pneumothorax. W. J. Dobbie, Weston, Ont.—p. 352.

Focal Tuberculin Reaction.—The patient whose case is reported by Rappaport and Ellison did not present any evidence of pulmonary tuberculosis but showed, by most pronounced local, general and focal reactions, following a Pirquet test, a very remarkable degree of specific hypersensitiveness. The case also presents other points of interest in that the positive sputum was not the result of pulmonary tuberculosis but of tracheobronchial lymph node involvement, and also the pathogenesis as a whole was difficult of interpretation.

Ether Anesthesia in Tuberculosis Patients.—Grandy emphasizes the dangers of ether by inhalation in tuberculosis cases, and urges giving the anesthetic by rectum. The only objection to the ether-oil method is that it takes longer to give than ether by inhalation, and the surgeon may be kept waiting. In such an instance, it will not do any harm to give a whiff of chloroform or even a whiff of ether, which will be sufficient to put the patient under.

Isolation of Tubercle Bacilli.—A new method for the isolation of tubercle bacilli from contaminated sources is proposed by Corper and Uyei, who use 6 per cent sulphuric acid at 37 C. for thirty minutes in the preliminary treatment of the tuberculous material, and crystal-violet-potato medium for making a culture of the bacilli.

Tubercle Bacillus a Mutation Form.—Experimental study leads Duffy to conclude that the bacillus of Koch is apparently the end-micro-organism of a chain of mutation forms.

Red Cell Sedimentation in Children.—No correlation was found by Greisheimer et al. between age and the red cell sedimentation index. The latter seems higher in children than in adults. No marked differences were found between boys and girls. Weight did not seem to be a determining factor in the sedimentation test.

Annals of Otol., Rhinol. & Laryngol., St. Louis

36: 579-882 (Sept.) 1927

Theories of Sound Analysis and Intensity Control. A. G. Pohlman, St. Louis.—p. 579.
Otitis Media in Infants. D. M. Lierle, Iowa City.—p. 604.
Tuberculosis of Middle Ear: Heliotherapy. S. J. Chapman, Colorado Springs.—p. 631.
Correction of Saddle Nose with Bone and Cartilage Implants. L. Cohen, Baltimore.—p. 639.
Injection of Nasal Ganglion. G. Sluder, St. Louis.—p. 648.
Rôle of Surgery in Roentgen-Ray Treatment of Cancer in Larynx. G. Portmann, Bordeaux, France.—p. 656.
Osteitis Deformans and Eye, Ear, Nose and Throat Specialties. S. Moore, St. Louis.—p. 662.
Differential Diagnosis Between Septic Meningitis, Brain Abscess and Lateral Sinus Thrombosis Complicating Mastoiditis. G. W. Swift, Seattle.—p. 669.
Lateral Thrombosis with Delayed Metastasis: Case. R. A. Fenton, Portland, Ore.—p. 675.
Brain Abscess of Otitic Origin. F. E. Hasty, Nashville, Tenn.—p. 678.
Acute Mastoiditis with Complicating Facial Paralysis; Recovery After Operation. A. Greenstein, New York.—p. 684.
Pediatric Aspects of Otolaryngology. M. Marriott, St. Louis.—p. 686.
Frontal Sinus Empyema in Young Children. I. M. Lupton, Portland, Ore.—p. 693.
Meningitis of Nasal Origin: Surgical Anatomy. R. F. Nelson, Oakland, Calif.—p. 701.
Frontal Sinusitis Complicated by Extradural Abscess and Frontal Lobe Abscess. J. M. Brown, Los Angeles.—p. 710.
Malignant Neoplasms of Antrum. G. H. Thompson, North Adams, Mass.—p. 715.
Disease of Ethmoid Labyrinth. L. M. Callaway, Kansas City, Mo. —p. 733.
Tonsil Infection: Cases. J. C. Tucker, Beatrice, Neb.—p. 748.
Tuberculosis of Respiratory Tract Viewed from Immunity and Biologic Aspect. D. Nussbaum, Philadelphia.—p. 768.
Streptococcic Laryngitis: Case. V. K. Hart, Statesville, N. C.—p. 781.
Ophthalmic Contacts with Otolaryngology. W. H. Luedde, St. Louis. —p. 786.
Focal Infections of Head. E. E. Poos, Detroit.—p. 798.
Nasal Manifestations of Allergy. C. H. Eyermann, St. Louis.—p. 808.
Trichloracetic Acid in Treatment of Ulcerative Laryngeal Tuberculosis. B. C. Davies, Los Angeles.—p. 816.
Allergy as Related to Otolaryngology. W. W. Duke, Kansas City, Mo. —p. 820.
Hyperesthetic Rhinitis and Myxedema. F. J. Novak, Jr., Chicago.—p. 829.
Diagnostic Mistakes: Plea for Imperative Biopsy. M. R. Guttman, Chicago.—p. 837.

Arch. Physical Therapy, X-Ray, Radium, Omaha

8: 431-491 (Sept.) 1927

*Effects of Diathermy in Osteomyelitis. D. Kobak, Chicago.—p. 431.
Therapeutic Values of Exercise. J. C. Elsom, Madison, Wis.—p. 437.
Surgical Indications for Electrothermic Methods. W. L. Clark, Philadelphia.—p. 442.
*Intensive Methods of Applying Heat for Relief of Pain and Other Therapeutic Effects. J. H. Kellogg, Battle Creek, Mich.—p. 448.
Effect of Lower Frequencies of Radiant Energy on Some Forms of Germ Life. W. B. Snow, New York.—p. 455.
Value of Lipoidol in Roentgen-Ray Examinations of Lungs. A. F. Tyler, Omaha.—p. 462.
Value of Dye in Gallbladder Examinations. R. W. Fouts, Omaha.—p. 463.

Effects of Diathermy in Osteomyelitis.—Two rules in the application of diathermy to chronic traumatic osteomyelitis are laid down by Kobak: 1. Gentle diathermy applications apparently increase and intensify the processes, undoubtedly chemical, responsible for repair and union. 2. Superficial healing, which includes diathermy wrongly applied, as by the ineffective double cuff method, and various forms of light, may be a contraindication and may even be conducive to arrest of union and repair. The method of treatment was essentially alike in all cases excepting for the size and location of the electrodes, which was determined by the anatomic location of the pathologic changes. The guiding principle was to furnish, whenever possible, through and through diathermy, not double cuff. The treatments, administered over a thirty day period, were given every twenty-four hours excepting in outpatient cases, in which expediency permitted only three treatments a week. Short twenty minute treatments with a current density of 60 milliamperes per square inch of active electrode surface (the measure is taken from the smaller of the two electrodes, if their size is unequal) were furnished.

Relief of Pain by Heat.—Kellogg avers that the intensity of a hot application may be greatly increased by combining

with it some means of simultaneously cooling the skin surface. This method requires the use of some suitable source of heat radiation. Either an arc light, the incandescent lamp, or a heating element may be used. A small electric fan will supply the air current. With a current of air falling on the heated surface, the intensity of the light application may be doubled. This means that the tissues beneath the skin surface are receiving twice as long quantities of radiant energy as they could receive without the protective cooling of the skin surface. By this means, quantities of heat may be applied which would be absolutely intolerant to the skin and would produce structural injury if long continued, and this without the slightest injury to the skin tissues or the slightest interference with the passage of the penetrating heat rays to the deeper structures.

Atlantic Medical Journal, Harrisburgh, Pa.

30: 759-856 (Sept.) 1927

Diagnosis of Lateral Sinus Infection. G. L. Tobey, Jr., Boston.—p. 759.
Dermatologic Leads to Internal Medical Diagnosis. L. L. Schwartz, Pittsburgh.—p. 762.
Etiology and Treatment of Primary Pruritus. C. S. Wright, Philadelphia.—p. 765.
Drug Eruptions. W. H. Guy, Pittsburgh.—p. 768.
Acute Encephalitis from Internist's Point of View. W. M. Bortz, Greensburg, Pa.—p. 771.
Pathology of Epidemic Encephalitis. A. J. Bruecken, Pittsburgh.—p. 774.
Residuals of Encephalitis. W. H. Mayer, Pittsburgh.—p. 776.

Boston Medical and Surgical Journal

197: 415-456 (Sept. 15) 1927

Tuberculosis Situation in Massachusetts. H. D. Chadwick, Westfield, Mass.—p. 415.
Treatment of Pulmonary Tuberculosis. E. B. Emerson, Rutland, Mass.—p. 419.
Incidence of Contagious Diseases in Sanatoriums. E. C. Willoughby, Wilmington, Mass.—p. 422.
Sanatorium Treatment of Extrapulmonary Tuberculosis. L. A. Alley, Middleboro, Mass.—p. 424.
Admission of Nontuberculous Patients to Tuberculous Hospital. H. S. Wagner, Pocasset, Mass.—p. 426.
Pleurisy with Effusion. O. S. Pettingill and A. H. Stanhope, Middleton, Mass.—p. 428.
Suppression of Kidney Function Following Absorption of Mercuric Chloride. W. A. Flynn, Amesbury, Mass.—p. 436.

197: 457-506 (Sept. 22) 1927

*Tobacco Smoking as Factor in Production of Peptic Ulcer and Gastric Neurosis. C. W. Barnett, San Francisco.—p. 457.
Clinical Value of B. Acidophilus Milk. H. A. Cheplin, Syracuse, N. Y.—p. 460.
*Strangulated Hernia in Aged. C. Bearse, Boston.—p. 471.
History of Bleeding and Leeching. T. W. Thorndike, Cambridge, Mass.—p. 473.

Effect of Tobacco Smoking.—From an examination of the records of the Peter Bent Brigham Hospital of all cases of gastric and duodenal ulcer and of gastric neurosis occurring in males, with respect to the use of tobacco, and from a comparison with 500 control cases selected at random from the general admissions, Barnett concludes that there is no proof that smoking is of any importance in the etiology of peptic ulcer or gastric neurosis, or that smoking has any effect on the age of incidence of gastric or duodenal ulcer.

Strangulated Hernia in Aged.—Bearse analyzes twenty-one cases. The patients were more than 65. They were operated on for strangulated hernia. The cause of strangulation may have been coughing due to chronic bronchitis or emphysema, increased abdominal pressure due to increased deposit of fat in the peritoneal cavity, or the greater straining action necessary in urination and defecation due to laxity of abdominal muscles. The average duration of these hernias before strangulation was more than twenty-three years. There were sixteen males and five females. Two of the hernias were femoral; all of the others were inguinal. The operations were performed under local anesthesia, procaine hydrochloride (0.5 per cent) being used by the infiltration method. There were only two deaths. One was that of a patient already in the hospital suffering from a very grave cardiac lesion, who developed a strangulation. The other was of a man who had a reduction *en bloc* under nitrous oxide anesthesia, was seen for the first time about three weeks after strangulation, and was kept in bed a fourth week, refusing to be placed in a chair; he died of a bronchopneumonia.

California and Western Medicine, San Francisco

27: 305-448 (Sept.) 1927

*Cholesterosis of Gallbladder. E. S. Judd, Rochester, Minn., and S. H. Mentzer, San Francisco.—p. 337.
Doctor's Civic Obligations. W. R. Calderwood, Salt Lake City.—p. 340.
Lymphoblastoma. H. B. Thompson, Seattle.—p. 343.
*Backache Due to Seminal Vesiculitis and Prostatitis. M. B. Wesson, San Francisco.—p. 346.
Arthritic Joint Pains and Gout. J. E. Harbinson, Woodland.—p. 352.
Poliomyelitis Control. G. E. Ebright, San Francisco.—p. 354.
Tuberculosis: Treatment. J. W. Cook, Banning.—p. 357.
*Granuloma Coccidioides. H. P. Jacobson, Los Angeles.—p. 360.
Streptococcus Mucosus Infection Causing Lateral Sinus Thrombosis. H. J. Profant, Santa Barbara.—p. 364.
Incidence of Pelvic Pathology. H. C. Seaver, Los Angeles.—p. 367.
Anesthesia: Postoperative Pulmonary Complications. L. R. Chandler, San Francisco.—p. 370.
Supervision of Diagnostic Laboratories. W. H. Kellogg, San Francisco.—p. 375.
Anesthesia in Urologic Surgery. M. E. Botsford, E. Righetti and C. M. Johnson, San Francisco.—p. 377.

Cholesterolosis of Gallbladder.—One thousand cases of cholesterolosis of the gallbladder were studied by Judd and Mentzer. In half of these, gallstones were associated. In 13.5 per cent there was a history of typhoid. Obesity was associated in 24 per cent of those without stones and in 33 per cent of those with gallstones. Pregnancy had occurred in 58 per cent and 67 per cent of the cases, respectively. The majority of women dated their trouble to the time of their first pregnancy. Pain was located in the right upper quadrant, and radiated directly posteriorly in the greatest number of cases in each group. Indigestion was an almost universal complaint in both groups. True qualitative food distress was present in 40 per cent of the cases without stone and in 50 per cent of those with stone. Belching or bloating, or both, were present in 55 per cent and 61 per cent of the groups, respectively. Vomiting occurred in 35 per cent and 45 per cent of the groups, respectively. Jaundice was present in 17 per cent of each group. Chills and fever occurred in about 20 per cent of each group.

Backache Due to Seminal Vesiculitis and Prostatitis.—Wesson reports four cases of backache that are characteristic of some of the complications that follow nonvenereal prostatitis and seminal vesiculitis.

Granuloma Coccidioides.—Jacobson adds two additional cases of granuloma coccidioides to the eighty-three cases of this disease recorded in the literature. While heretofore conservative treatment has practically always failed to check the progress of this infection, the employment of copper in the treatment of these two patients has apparently caused a recession of the disease process.

Florida M. A. Journal, Jacksonville

14: 107-154 (Sept.) 1927

Ureteral Stricture as Etiologic Factor in Kidney Disease. C. Panettiere, Miami Beach.—p. 123.
Urinary Obstruction from Contracture of Vesical Orifice. E. C. Shaw, Miami.—p. 125.
Osteitis Deformans. J. W. Snyder, Miami.—p. 129.
Roentgenologic Diagnosis of Osteitis Deformans. G. Raap, Miami.—p. 133.
Syphilis. J. E. Hall, West Palm Beach.—p. 135.

Georgia M. A. Journal, Atlanta

16: 298-332 (Sept.) 1927

Rickets. W. W. Anderson, Atlanta.—p. 298.
*Banana Diet in Treatment of Chronic Intestinal Indigestion in Children. J. Yampolsky, Atlanta.—p. 302.
Starvation Diet Versus Feeding in Treatment of Summer Diarrheas. W. A. Mulherin, Augusta.—p. 305.
Zinc Stearate Poisoning. L. H. Goldsmith, Atlanta.—p. 310.

Banana Diet in Chronic Intestinal Indigestion.—Yampolsky reports three cases as proof of the therapeutic value of banana to overcome intestinal upsets in children. A ripe banana has a brown skin and a bland, sweet taste, and it never puckers the mouth. While it is difficult to get the child to take the bananas at first, as soon as one succeeds in getting them to eat them, the successful outcome of the case is assured. The

number of bananas taken may be unlimited. Haas reported the case of a child, aged 24 months, who ate sixteen bananas a day. The caloric value of the diet is usually very high, and the treatment sometimes must be continued for two years or more.

Iowa State Medical Society Journal, Des Moines

17: 307-344 (Sept.) 1927

Relation of Health Department to Practicing Physician. H. Albert, Des Moines.—p. 307.
Malta Fever. L. R. Woodward, Mason City.—p. 312.
Tularemia in Iowa in 1926. A. V. Hardy, Iowa City.—p. 317.
Senility. R. Lovelady, Sidney.—p. 319.

Johns Hopkins Hospital Bulletin, Baltimore

41: 139-184 (Sept.) 1927

Vascular Patterns of Tumors. W. H. Lewis, Baltimore.—p. 156.
*Fatal Methyl Salicylate Poisoning. J. B. Pincus and H. E. Handley, Baltimore.—p. 163.
*Transmissible Toxicogenicity of Streptococci. M. Frobisher, Jr., and J. H. Brown, Baltimore.—p. 167.

Methyl Salicylate Poisoning.—A study of the case reported by Pincus and Handley shows that the kidneys are constantly and most seriously injured in methyl salicylate poisoning.

Transmissible Toxicogenicity of Streptococci.—Nontoxicogenic, nonscarlatinal streptococci and strains of *B. coli, B. prodigiosus, B. subtilis* and *S. albus* have been cultivated by Frobisher and Brown in mixed culture with toxicogenic, scarlatinal streptococci, and then recovered in pure culture. Two nonscarlatinal streptococci were found to have acquired, temporarily, a definite toxicogenicity, giving rise to a toxin which is neutralized by antiscarlatinal serum. The other organisms did not acquire any toxicogenicity. Nontoxicogenic streptococci may acquire a toxicogenicity from sterile Berkefeld filtrates of the scarlatinal types, although the toxicogenic powers so acquired are in general less marked than those acquired from the mixed cultures. The existence of a filtrable second factor associated with the scarlatinal streptococci is suggested.

Journal of Industrial Hygiene, Baltimore

9: 371-426 (Sept.) 1927

Health Hazards in Cotton Industry. W. F. Dearden, Manchester, England.—p. 371.
Effects of Mine Gases. R. F. Herndon, Springfield, Ill.—p. 402.
Simple Face Mask for Certain Types of Dusty Industrial Processes. L. P. Lockhart, Nottingham, England.—p. 421.

Kentucky Medical Journal, Bowling Green

25: 471-546 (Sept.) 1927

Dental Health and Its Relation to Good Health. R. P. Keene, Owensboro.—p. 502.
Piece of Steel Removed from Eye with Magnet. C. T. Wolfe, Louisville.—p. 504.
Tumors of Nasopharynx and Accessory Sinuses. J. G. Sherrill, Louisville.—p. 506.
Galvanism in Treatment of Internal Hemorrhoids. A. L. Kincheloe, Owensboro.—p. 514.
Otitis Media. H. H. Richeson, Louisville.—p. 517.
Mastoid Case. W. Dean, Louisville.—p. 520.
Case of Transverse Position. W. T. McConnell, Louisville.—p. 521.
*Empyema: Five Cases. E. E. Butler, Louisville.—p. 523.
Positive Urinary Fehling's Test in Connection with Obstetric Cases. C. E. Gaupin, Louisville.—p. 526.
Electrical Changes in Living Tissue, as Cause of Drug Action. R. Beutner, Louisville.—p. 530.
Visit to Lepra Hospital. A. O. Pfingst, Louisville.—p. 531.
Rhinolith of Large Size. A. L. Bass, Louisville.—p. 533.

Treatment of Empyema.—Butler reports excellent results from the use of drainage and from irrigation of the empyema cavity with sterile physiologic sodium chloride solution. Rib resection was not resorted to in any case.

Medical Journal and Record, New York

126: 333-400 (Sept. 21) 1927

Medical Measures Used in Treatment of Hematemesis. W. A. Bastedo, New York.—p. 333.
Diagnosis of Incipient Pulmonary Tuberculosis. W. F. Dutton, Amarillo, Texas.—p. 336.
Preclinical Signs in Proctology. R. V. Gorsch, New York.—p. 339.
Significance of Phantasy in Neurotic Behavior. P. R. Lehrman, New York.—p. 342.
Cause and Cure of Hay-Fever, Bronchial Asthma and Paroxysmal Rhinorrhea. M. Agar, London.—p. 344.
Age and Equilibrium of Life. E. McDonald, Philadelphia.—p. 346.
Cancer: XXII. Genesis: Precancerous State. W. Meyer, New York.—p. 349. C'tn.
Bismuth in Treatment of Wassermann Fast Tertiary Luetics: 187 Cases. F. S. Mason, New York.—p. 352.
Numoquin-Base (Ethylhydrocupreine) in Treatment of Lobar Pneumonia. F. B. Cross, New York.—p. 354.
Curet and Curettement. R. I. Bromely, Sonora, Calif.—p. 357.
Twin Pregnancies: Fifty Cases. A. L. McIlroy and E. C. Evans, London.—p. 359.
Causation and Prevention of Tears of Parturient Outlet. L. Drosin, New York.—p. 363.
*Discharge of Catheter Through Abdominal Wall from Uterus. H. L. Bottomley, Philadelphia.—p. 368.
*Fetal Head in Uterus for Four Years. H. Cohen, New York.—p. 369.
Cervix Uteri as Source of Infection. E. Hoenig, New York.—p. 370.
*Case of Missed Abortion Presenting Unusual Features. A. Stein, New York.—p. 373.
History of Epidemic Encephalitis from Egyptian and Hippocratic Medicine. J. Wright, Pleasantville, N. Y.—p. 375.

Discharge of Catheter Through Abdominal Wall from Uterus.—In Bottomley's case, a linen catheter had been introduced into the uterus to produce abortion. It disappeared but was later extruded through the abdominal wall. Bottomley concludes that the catheter evidently passed through the anterior wall of the uterus. In the resulting inflammatory process, the uterus became adherent to the anterior abdominal wall. An abscess developed in the anterior abdominal wall, ahead of the catheter, no foreign body having been palpated in the circumscribed abcess cavity, the catheter later passing through the abdominal wall and emerging at the sinus outlet.

Fetal Head in Uterus Four Years.—Four years before Cohen saw this patient, she had had a miscarriage, having been at that time about four months pregnant. A curettage was performed by a local physician. Soon after this curettage, a severe leukorrhea had developed which persisted to the present. The menstrual history did not show anything unusual. She had never given birth to a child. Three years before there developed excruciating pain in the right kidney, and she had to be removed to a hospital where, after examination and observation, a right nephrectomy was done. She had also had a cough for a few days. On vaginal examination, although the fundus was slightly enlarged, nothing abnormal was felt in either of the fornices, the tubes and ovaries apparently being normal and the cervix itself also apparently being normal. The examining finger, however, felt some minute sharp point pricking it from the region of the cervical canal. Inspection by means of a speculum did not show anything abnormal. The roentgen-ray examination did not reveal anything. A curettage revealed the internal os absolutely closed. It was impossible to introduce a uterine sound owing to the completeness of the obstruction. After dilation of the cervix, many flat, curved bones resembling the head of a 4 months' old fetus both in shape and in size were removed. There was no other tissue in the uterine cavity except the expected amount of hypertrophied endometrium.

Case of Missed Abortion Presenting Unusual Features.—Stein reports the case of a woman, aged 37, who sustained an injury in the fourth month of her pregnancy that killed the fetus but did not cause her to abort. Five months later she exhibited symptoms which her physician mistook for those of an ordinary abortion. He attempted to perform a curettage in the home without an anesthetic. The result was a rupture of the anterior wall of the cervix, the induction of labor pains, and the birth of the blighted fetus into the vesico-uterine space. When a second attempt was made to perform a curettage, the instrument passed through the rent in the uterus and brought down omentum. At laparotomy, four puncture wounds were found in the small intestines, and a blighted fetus about 4 months' old was found lying partly in the vesico-uterine space and partly within the torn wall of the cervix. The intestinal perforations were sutured, supravaginal hysterectomy was performed, and the wound drained. The patient made a good recovery.

Michigan State M. Soc. Journal, Grand Rapids

26: 599-644 (Oct.) 1927

Arthritis. R. Pemberton, Philadelphia.—p. 599.
*Therapeutic Value of Hill Grown Grapefruit. E. C. Taylor and R. H. Alter, Jackson.—p. 605.
Results in Anorectal Surgery. L. J. Hirschman, Detroit.—p. 610.

Ultraviolet Therapy. G. C. Stewart, Hancock.—p. 614.
Occupational Therapy in Mental Diseases. M. Spear, Kalamazoo.—p. 616.
Coronary Occlusion. C. F. Karshner, Grand Rapids.—p. 619.
Sterility in Women. L. E. McCaffrey, Ann Arbor.—p. 624.
Pregnancy Following Inversion of Uterus. L. W. Haynes, Detroit.—p. 626.

Therapeutic Value of Grapefruit in Diabetes.—Grapefruit grown on the hills of Florida, where the soil is composed of a top layer of Norfolk loam and a very deep subsoil of red sand clay carrying about 3 per cent of iron oxide, produces the results obtained by Taylor and Alter in diabetic conditions. Fruit from many different localities in Florida was tried, and either no results were obtained or blood sugar was greatly increased under its use. In eighteen cases, sugar reappeared in the urine in forty-eight hours after its administration, although in every case there had been from ten to twenty days of freedom from sugar, preceding the use of the lowland fruit. Substitution of the hill grapefruit resulted in a prompt disappearance of the sugar. The fruit, grown on the south shore of Lake Harris in Lake County, the section known as the Howey development, is the only fruit found possessing these merits. There is good ground for the belief that this fruit carries an enzyme which, in addition to its wonderful power of increasing the alkalinity of the blood and gastro-intestinal tract, and assisting in restoring faulty and unbalanced metabolism, brings these results. Best results were obtained by the administration of six grapefruit daily. Analysis shows that each grapefruit contains 2.4 Gm. of protein; 0.6 Gm. of fat, and 31.2 Gm. carbohydrates, which are converted into 32.65 Gm. of dextrose and equal 139.8 calories. Six grapefruit thus have 839 calories. Clinical experience and clinical analysis of the blood have clearly demonstrated that this grapefruit burns much more blood sugar than insulin, and also does what insulin does not: corrects the cause. Its effects are much more lasting than those of insulin, and a very large percentage of the cases are substantially cured.

Military Surgeon, Washington, D. C.

61: 293-424 (Sept.) 1927

Field Service. J. W. Grissinger.—p. 293.
Reminiscences of American-Filipino War, 1899. C. M. Beadnell.—p. 317.
Pfeiffer Bacillus Meningitis. A. Schnaibel.—p. 339.
Medicomilitary Training. G. B. Lake.—p. 356.
Command Staff in Medical Regiment. T. L. Rhoads.—p. 361.
First Replacement Depot at St. Aignan, France. H. F. Schell.—p. 375.

New Jersey M. Soc. Journal, Orange

24: 515-556 (Sept.) 1927

Intestinal Obstruction. J. F. Erdmann, New York.—p. 515.
Gallstones. R. W. Walton, Montclair.—p. 519.
"Diagnostic" or "Clinical" Laboratories and Their Standardization. R. A. Kilduffe, Atlantic City.—p. 523.
New Milk Reform Movement Needed. J. M. W. Kitchen, East Orange.—p. 527.
Prostatic Hypertrophy. M. M. Brotman, Newark.—p. 528.
Case of Traumatic Incarcerated Hernia. D. B. Allmann, Atlantic City.—p. 532.

New York State J. Med., New York

27: 997-1056 (Sept. 15) 1927

Cancer Exhibit of Medical Society of State of New York. F. Overton, Patchogue.—p. 997.
The Memorial Hospital. J. Ewing, New York.—p. 1004.
Institute of Cancer Research, Columbia University. F. C. Wood, New York.—p. 1005.
Cancer: Etiology. B. T. Simpson, Buffalo.—p. 1006.
Id.: Modern Research. W. H. Woglom, New York.—p. 1009.
Id.: Treatment. B. F. Schreiner, Buffalo.—p. 1010.
Id.: Prevention and Diagnosis. I. Levin, New York.—p. 1015.
Id.: Popular Education. J. M. Swan, Rochester, N. Y.—p. 1021.
*Radium Treatment of Angiomas. G. A. Robinson, New York.—p. 1023.
*Pathologic Conditions of Cervix Uteri Tending Toward Cancer. J. N. West, New York.—p. 1025.

Radium Treatment of Angiomas.—Robinson has treated 276 cases of angiomas with radium. Seventy-seven children were less than 6 months old; 141 were less than 2 years old. The number of applications varied from three to five in small angiomas, and from twenty to thirty in the most extensive cases. There were no untoward after effects following the treatments. The final results, except in a few instances, were excellent.

Pathologic Cervix and Cancer.—West asserts that if the cervices of all women past 40 could be put in healthy condition, perhaps two thirds of the cases of carcinoma of the cervix could be prevented.

Ohio State Medical Journal, Columbus

23: 791-878 (Oct.) 1927

*Dangers of Indiscriminate Removal of Infected Teeth. R. Dexter, Cleveland.—p. 811.
*Surgical Treatment of Hemorrhoids and Ischio-Anal Fistulas. F. Fee, Cincinnati.—p. 815.
Certain Clinical Problems Relating to Lacrimal Apparatus. I. G. Clark, Columbus.—p. 819.
Eclampsia. G. C. Gilfillen, Dayton.—p. 823.
Foci of Infection and Central Nervous System. H. H. Hoppe, Cincinnati.—p. 827.
*Control of Smallpox. G. W. Moorehouse and T. G. Duncan, Cleveland.—p. 833.

Extraction of Infected Teeth.—Dexter reports twelve cases in which either extremely severe or fatal local or general infectious processes followed the removal of abscessed teeth. The number varied from one tooth to a whole upper set.

Treatment of Hemorrhoids.—Fee points out that more than 75 per cent of patients suffering from anorectal diseases can be treated in the office or outpatient clinic. Local anesthesia can be successfully used in all of the 75 per cent, and in a majority of the remaining 25 per cent which would require hospitalization. The injection treatment for uncomplicated internal hemorrhoids is said to be safe and efficient in skilled hands.

Control of Smallpox.—Moorehouse and Duncan cite statistics as proof that the routine vaccination of school children, when continued systematically, gives a community very definite protection against the spread of smallpox if introduced. From time to time, when conditions make this procedure possible, wholesale vaccination increases the general immunity of the population. The use of the immune reactions makes the argument for vaccination more convincing by the assurance of immunity to persons revaccinated without reference to exposure, and by the prompt release from quarantine of contacts whose vaccination is not recent but can still be shown to afford complete protection.

Philippine Islands Med. Assoc. Journal, Manila

7: 275-318 (Aug.) 1927

Clinical Mimicry in Malaria. W. Vitug and P. Ignacio, Manila.—p. 275.
Insulin-Glucose in Surgical Shock: Two Cases. M. N. Tuason, Manila.—p. 283.
Chronic Gonorrhea. M. Baltasar, Manila.—p. 286.
*Chorio-Epithelioma Among Filipinos. M. Paz Mendoza-Guazon, Manila.—p. 292.

Chorio-Epithelioma Among Filipinos.—Chorio-epithelioma was found by Mendoza-Guazon six times in 3,932 autopsies of Filipino women. The youngest patient was 25 years old, and the oldest, 50 years. Choriocarcinoma is the most malignant of all the types of chorio-epithelioma.

Physical Therapeutics, Baltimore

45: 407-456 (Sept.) 1927

Thermal Radiation, Especially Ultraviolet Rays, Used in Phototherapy. W. W. Coblentz, Washington, D. C.—p. 407.
Roentgen-Ray Standardization Problems. F. L. Hunt, Washington, D. C.—p. 422.
Effects of Lower Frequencies of Radiant Energy on Some Forms of Germ Life. W. B. Snow, New York.—p. 431.

Public Health Reports, Washington, D. C.

42: 2193-2240 (Sept. 2) 1927

Pellagra: Nature and Prevention. J. Goldberger.—p. 2193.

42: 2241-2289 (Sept. 9) 1927

Unexplored Field of Preventive Medicine in Private Practice. W. F. Draper, Washington, D. C.—p. 2241.

42: 2291-2336 (Sept. 16) 1927

Shellfish Sanitation. L. M. Fisher, Washington, D. C.—p. 2291.

Radiology, St. Paul

9: 269-358 (Oct.) 1927

Radiation Therapy in Dermatology. R. H. Stevens, Detroit.—p. 269.
*Source of Asthma in Children. T. D. Cunningham, Denver.—p. 280.
Action of Roentgen Rays on Endocrine Glands. H. L. Wintz, Erlangen, Germany.—p. 285.

Thermocauterization of Malignant Growths: Direct Acetylene Flame. W. H. Kennedy and H. Row, Indianapolis.—p. 304.
Device for Reduction of Fractures. L. G. McCutchen, St. Louis.—p. 308.
*Treatment of Malignancy of Cervix by Radium. I. I. Kaplan, New York.—p. 314.
Relation of Degree of Histologic Malignancy to Prognosis and Treatment of Carcinoma of Uterine Cervix. H. Schmitz, Chicago.—p. 322.
Case of Calcified Thyroid. R. A. Arens and A. R. Bloom, Chicago.—p. 333.
Inguinal Granuloma of Unknown Origin Associated with Bone Changes. J. R. Carty, New York.

Asthma in Children.—The correlation of sinus infection, bronchitis and asthma is stressed by Cunningham in his discussion of the etiology of asthma.

Radium Therapy of Cervix Carcinoma.—Carcinoma of the cervix is not operated on at Bellevue Hospital. Biopsy is done in every case. Kaplan says that the lesion is treated by (1) disinfection of the local area; (2) roentgen-ray therapy of the pelvis; (3) radium therapy to the local lesion, and (4) radium puncture and endothermic surgery when needed. The dosage varies with the histology and extent of the lesion. The treatment is given at once, with small doses over long periods of time. High voltage roentgen rays, with heavy filtration, and radon in heavily filtered platinum tubes are used for the specific radiation therapy.

South Carolina M. A. Journal, Greenville

23: 457-476 (Sept.) 1927

Heredity as Factor in Medicine. W. J. Bristow, Columbia.—p. 458.
Nonspinal Psoas Abscess. G. T. Tyler, Jr., Greenville.—p. 466.
Fatal Bite by Unknown Insect or Reptile. H. L. Shaw, Sumter.—p. 468.

Texas State Journal of Medicine, Fort Worth

23: 311-372 (Sept.) 1927

Incidence and Treatment of Complications of Duodenal Ulcer. D. C. Balfour, Rochester, Minn.—p. 320.
Early Ileostomies as Prevention and Relief of Toxic Ileus Following Peritonitis. R. W. Knox, Houston.—p. 323.
Cancer of Large Bowel. G. V. Brindley, Temple.—p. 325.
Acute Pancreatitis Due to Gallstone Obstructing Duct of Wirsung. F. L. Barnes, Houston.—p. 331.
Cleft Lip and Cleft Palate. A. L. Frew, Dallas.—p. 333.
Traumatic Affections of Crystalline Lens. J. O. McReynolds, Dallas.—p. 336.
Use of Glaucosan in Treatment of Glaucoma. N. E. Israel, Houston.—p. 340.
First Infections and Reinfections in Pulmonary Tuberculosis. G. T. Caldwell, Dallas.—p. 344.
Radiologic Diagnosis of Pulmonary Tuberculosis. C. L. Martin, Dallas.—p. 346.
Incipient Tuberculosis. H. M. Winans, Dallas.—p. 349.

Virginia Medical Monthly, Richmond

54: 335-402 (Sept.) 1927

Sir William Osler. A. F. Robertson, Jr., Staunton.—p. 335.
Blood Pressure: Essential Hypertension. N. G. Wilson, Norfolk.—p. 340.
*Albuminuria in Relation to Disease of Tonsils. C. P. Jones, Newport News.—p. 346.
Treatment of Infections and Injuries of Extremities. R. A. Moore, Phenix.—p. 349.
Acute Ear Conditions in General Practice. H. D. Gilmer, Hagerstown, Md.—p. 351.
Pituitary Tumor with Unilateral Quadrant Hemianopsia. F. G. Speidel, Washington, D. C.—p. 353.
John Cullen. W. B. Blanton, Richmond.—p. 356.
Nonspecific Pulmonary Infections from Chronic Sinusitis. G. Preston, Harrisonburg.—p. 358.
Diagnosis, Treatment and Outcome of Gallbladder Disease. J. R. Verbrycke, Jr., Washington, D. C.—p. 364.
Cardiac Symptoms from Standpoint of General Practitioner. B. H. Martin, Richmond.—p. 367.
Why Young Physicians Are Not Locating in Country. W. W. Kerns, Bloxom.—p. 369.
Summer Diarrhea in Infancy. H. Urbach, Richmond.—p. 370.
Burns of Cornea. C. S. Dodd, Petersburg.—p. 373.
Surgery: Urology. J. S. Rosenthal, Washington, D. C.—p. 374.
Retirement. I. S. Stone, Washington, D. C.—p. 375.
Case of Decompensating Rheumatic Heart. A. G. Brown, Jr., Richmond.—p. 376.
Two Cases of Nephritis Apparently Cured by Tonsillectomy. B. M. Randolph, Washington, D. C.—p. 378.
Case of Serum Sickness Following Diphtheria Toxin-Antitoxin. B. P. Seward, Richmond.—p. 381.
Streptothrix Concretion of Canaliculus: Case. C. A. Young, Roanoke.—p. 382.

Albuminuria and Tonsil Disease.—Jones feels that routine tests will disclose the presence of albuminuria or other evidences of nephritis in the majority of cases of acute tonsillitis or other tonsillar infections.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

11: 417-480 (Sept.) 1927

*Two Pedigrees of Hereditary Optic Atrophy. C. H. Usher.—p. 417.
*Pedigree of Family Showing Hereditary Glaucoma. R. R. James.—p. 438.
*Family History of Choroidal Sarcoma. R. C. Davenport.—p. 443.
*Family with Blue Sclerotics. J. N. Duggan and B. P. Nanavati.—p. 445.
*Family with Aniridia. J. N. Duggan and B. P. Nanavati.—p. 447.
Krukenberg's Spindle. E. Thomson and A. J. Ballantyne.—p. 450.

Hereditary Optic Atrophy.—Usher presents a pedigree of Leber's disease containing three affected males in one sibship, an affected first cousin, and certainly two—one a female—but probably four affected cases in previous generations. The three brothers with the condition are members of a sibship of ten in which four are males and six females. A second pedigree contains sixteen individuals with double optic atrophy, all members of two generations; namely, generations 3 and 4. The ten cases in generation 3 are the offspring of five unaffected sisters who presumably carry the condition. The oldest of these sisters has four daughters and four sons; of these all of the sons are affected and none of the daughters. The next sister had a family of nine, of whom four grew up, two sons and two daughters; only one of her sons was affected. The next sister had fourteen children; nine grew up, two males and seven females; one son and two daughters were affected. The next sister had a son and six daughters; the son alone was affected. The youngest sister had two sons and two daughters; one son died in infancy and the other was affected; neither daughter had any visual defect. The six cases in generation 4 are all sons of unaffected females who occur in two sibships containing affected males, so that the sons have one or more affected maternal uncles.

Hereditary Glaucoma.—Among fifteen members of three generations of one family, James found eight cases of glaucoma. Three of the grandparents were affected and five of their children. Only one of each family married, and the two children of this union are not affected. In the family in which only the grandmother had glaucoma, three girls and one boy had it. In the family with both grandparents affected only one child, a boy, was affected. One of the affected boys of family 1 married an unaffected girl of family 2. Their two children are still free of the disease.

Hereditary Choroidal Sarcoma.—Davenport cites the history of four generations of one family in which choroidal sarcoma was noted. The first progenitor gave a suggestive history. Of her four children, two, twin boys, one gave a suggestive history and one had the disease. This last mentioned one married, had seven children (six boys and one girl) and two of the boys had choroidal sarcoma. One of these boys married, and his two children, boys, had the sarcoma. One of these boys married and had a daughter, but she has as yet no evidence of the disease.

Hereditary Blue Sclerotics.—Duggan and Nanavati report a case in a boy whose father was normal but on his mother's side there was a family history of blue sclerotics. He had two sisters who were also affected. The mother of the three children had also blue sclerotics. Her brother, who was slightly affected, and both her sisters had the same color about their eyes. The brother had three sons with normal eyes, but both the sisters had the abnormality in their families, which consisted of two boys and two girls in each case. The maternal grandmother of the children, who seemed to be the starting point, was also similarly affected. This brought out the interesting points that the abnormality was transmitted through the affected females to the descendants of the family and was dying out through the only male member who was slightly affected. There was no consanguinity of parents. All cases were bilateral. No evidence of fragilitas ossium, deafness or congenital syphilis could be obtained. All cases were free from error of refraction except one, in which there was myopia.

Familial Aniridia.—Duggan and Nanavati report the cases of one girl and three boys with aniridia. The defect seemed to be inherited from their mother, who had nystagmus, bad

sight and probably aniridia. All the children had myopia and nystagmus except one in whom nystagmoid jerks could be obtained. In none could suspensory ligament, ciliary processes or pigmentary disturbances in the fundus be seen. In one case interstitial keratitis was present. In another boy subluxated opaque lens in each eye and buphthalmos on one side were found. In the last case, a white patch probably of choroidal atrophy was noted.

British Medical Journal, London

2: 439-476 (Sept. 10) 1927

Darwin's Theory of Man's Descent as It Stands Today. A. Keith.—p. 439.
*Abuse of Cesarean Section. H. Jellett.—p. 451.
Hygiene of Menstruation in Adolescents: I. Developmental Changes. R. W. Johnstone.—p. 442.
Id.: II. Influence of General Health. J. H. P. Paton.—p. 444.
Id.: III. Prevention of Troubles. A. E. S. Clow.—p. 446.
Teaching of Forensic Medicine. J. Glaister.—p. 448.
Abuse of Cesarean Section. H. Jellett.—p. 451.
Ménière's Disease Treated by Electrophoniode. A. Ferguson.—p. 454.
Pulmonary Embolism Following Childbirth. A. W. Bowman.—p. 454.

Abuse of Cesarean Section.—Jellett summarizes his discussion as follows: Cesarean section done under the most favorable conditions is associated with a mortality of nearly 2 per cent, and may be followed by peritoneal adhesions, and subsequent rupture of the scar. Cesarean section done under unfavorable conditions is followed by a mortality of from 10 to 50 per cent, and in patients who survive, the risk of after-complications is greater, The only way of avoiding such operations is careful antenatal diagnosis, and the only way of reducing their mortality when they are necessary is to remove the uterus. Unless there is good reason for thinking that the uterine incision has healed satisfactorily, it may be unwise to allow a patient to deliver herself at subsequent pregnancies. The treatment of eclampsia by cesarean section is followed by a mortality of from 16 to 34 per cent. Conservative treatment is followed by a far lower mortality. The treatment of placenta praevia by cesarean section is followed by a mortality of from 11 to 20 per cent. Obstetric treatment is followed by a far lower mortality.

Edinburgh Medical Journal

34: 505-564 (Sept.) 1927

*Effects of Volcanic Action in Production of Epidemic Diseases. J. D. Comrie.—p. 505.
Amyloidosis. W. Susman.—p. 527.

Effect of Volcanic Action in Production of Epidemic Diseases.—Comrie presents evidence which negatives the belief formerly held that volcanic eruptions were in some way responsible for epidemics of disease. Some remote effects of long past volcanic action may be traceable in the restriction of certain diseases to races and peoples who have been isolated by such volcanic action, and in later excessive incidence among nonimmune people. Owing to increasing rapidity of transport facilities, the possibility of this effect has now almost entirely disappeared.

Journal of Mental Science, London

73: 195-360 (April) 1927

Visual Imagery: Hallucinations. T. H. Pear.—p. 195.
Ultraviolet Radiation in Mental Hospital Practice. K. K. Drury.—p. 200.
*Induced Malaria. W. D. Nicol.—p. 209.
*Tryparsamide Therapy in General Paralysis. T. M. Davie.—p. 217.
*Id. M. Brown and A. R. Martin.—p. 225.
Introverted and Extroverted Tendencies of Schizoid and Syntonic States as Manifested by Vocation. G. W. T. H. Fleming.—p. 233.
*Blood Pressure in Insane. G. G. Parkin.—p. 240.
*Hemoclastic Crisis in Mental Defectives. W. R. Thomas and W. J. Lascelles.—p. 246.
*Biochemical Study of Blood and Urine in Mental Disorders. B. Reid.—p. 254.
*Fragility and Solubility of Red Blood Cells in Mental Disease. M. Scoresby-Jackson.—p. 257.
*Blood Sugar Curve in Dementia Praecox. J. F. Smith and H. G. Hill.—p. 265.
Therapeutic Effects of Subcutaneous Injection of Ringer-Locke's Solution in Various Forms of Mental Disease. T. Morowoka.—p. 269.
Extensity of Pallidal Lesion, or "Disseminated Pseudosclerosis:" An Unusual Case. P. L. Goitein.—p. 277.

Therapeutic Malaria.—A pure strain of the benign tertian malaria parasite was cultivated in mosquitoes, and made available for inoculation by mosquito-bites instead of by the direct inoculation of blood from other patients at Horton Mental Hospital. Nicol says that the percentage of "cures" of general paralysis in patients inoculated by mosquito-bites is considerably higher than the percentage in patients infected by direct blood inoculation.

Tryparsamide Treatment of General Paralysis.—Davie regards tryparsamide as being a most valuable therapeutic agent in general paralysis, and in allied neurosyphilitic infections. There seems no reason to expect untoward effects of a serious nature with weekly 3 Gm. doses of this drug.

Tryparsamide Therapy.—Brown and Martin assert that a preliminary course of tryparsamide followed by malarial injection is at present the most rational method of treatment of general paralysis, particularly in the debilitated type of early general paralytic patient.

Blood Pressure in Insane.—Taken as a whole, the observations made by Parkin indicate that in all forms of mental disease, recent emotional reaction was the main cause of increases of the systolic pressure; the sooner the observation was made after the commencement of the excitement or agitation, the more marked the rise, which, however, was transient; if the excitement or agitation was prolonged, there would be a fall in the systolic pressure.

Hemoclastic Crisis in Mental Defectives.—In a series of 300 mental defectives of dangerous and violent propensities, seen by Thomas and Lascelles, a typical hemoclastic crisis occurred in 163 cases. The degree of mental defect does not appear to influence the result, the number of positive cases being about the same at all mental age levels. In patients showing mental disorders supervening on mental deficiency, the correlation was higher in dementia praecox (74 per cent); manic-depressive psychosis (60 per cent), and delusional and persecutory types (60 per cent). Six cases of chronic gastritis in the series showed positive reactions. In four patients who had suffered from epidemic encephalitis, three gave a positive hemoclastic crisis and one gave a negative reaction. Of thirty-one epileptic patients, seventeen gave a positive reaction. In three patients of a psychopathic type with a marked anxiety component, only one was positive.

Blood and Urine in Mental Disorders.—No abnormality in the results of the van den Bergh test, the fasting blood sugar, the lipase test or the indican test of the urine were found by Reid such as might suggest an autointoxication from metabolic disorder. In the depressed patients, an increase of the nonprotein nitrogen content of the blood was found, which might support the theory of Loney that there exists a relationship between certain toxic amines and melancholia.

Fragility and Solubility of Erythrocytes in Mental Disease.—Of sixty-four cases tested by Scoresby-Jackson, forty showed approximately normal solubility of the red blood cells in sodium taurocholate; twenty-four showed increased solubility as regards the fragility of the red blood cells in sodium chloride solutions. Fifty-five per cent of cases gave results which are outside normal limits. Cases in which the hemolytic point was markedly raised or lowered did not present any sign of any definite physical lesion. There was no marked difference in the ration of fragility between patients who were given drugs and those who were not.

Blood Sugar Curve in Dementia Praecox.—The blood sugar curves in ten cases of dementia praecox were found by Smith and Hill to be low, and the administration of thyroid and pituitary extracts had the effect of heightening the curve.

Kenya & East African Med. J., Nairobi, E. Africa

4: 131-161 (Aug.) 1927

Meteorobiologic Research in British East Africa. A. Walter.—p. 132.
*Palsy of Upper Extremity Possibly Due to Malaria. J. W. Graham.—p. 148.
*Acute Intestinal Obstruction Due to Taeniasis. J. A. Carman.—p. 152.

Palsy Due to Malaria.—Graham relates a case of palsy of the right arm due to malaria. There was a history of recurring attacks of fever for about fourteen days. The palsy began about the time the fever began, and grew worse as the attacks of fever continued. The patient's blood contained numerous subtertian parasites, and he had received no treatment, with

the exception of a single injection of quinine into the abdominal wall, which produced much local reaction and was, in part at least, probably unabsorbed. A severe dyspnea which was present on admission cleared up rapidly under quinine and appears to have been due to the malarial infection. Two months after admission, the patient had not had any relapse, and the condition of his right arm was much improved.

Teniae Cause Intestinal Obstruction.—Carman's patient complained of constipation and severe pain in the abdomen. There was no distention. He was given one-half ounce (15 cc.) of castor oil, but vomited it up. His pain was a good deal better. He died suddenly a few hours later. The cecum and several feet of the ileum were dark green and gangrenous and the enormously inflated small intestine was dark through its lower half, growing purple toward the gangrenous portion. The bowel was removed, though not without some tearing owing to its rotten condition, and through one opening so made a large tapeworm escaped. When the intestine was slit, six more worms, varying in length from 10 to 20 feet, were found to be occupying the lower part of the ileum. There was nothing else to account for the obstruction. The patient had presumably had complete obstruction for about seventy-two hours, was able to walk about within a few hours of death, and did not complain of pain until sixteen hours before he died.

Lancet, London

2: 485-534 (Sept. 3) 1927

Darwin's Theory of Man's Descent as It Stands Today. A. Keith.—p. 485.
*Malignant Lymphadenosis: Leukemic Diseases in General. T. V. Dickinson and H. Lwow.—p. 489.
*Congenital Hypertrophic Stenosis of Pylorus: Results of Rammstedt's Operation. S. Barling.—p. 492.
*Outbreak of Illness Caused by B. Dysenteriae-Flexner. S. H. Warren.—p. 494.
*Schultz-Charlton Reaction. J. C. Blake.—p. 495.
Multiple Diverticula of Jejunum. J. A. Berry.—p. 496.
Meningitis Due to Hemophilic Bacillus. J. A. B. Hicks.—p. 497.
Femoral Hernia in Children. R. Rutherford.—p. 498.

Malignant Lymphadenosis.—Dickinson and Lwow describe a case of a benign aleukemic lymphadenosis of many years' duration which suddenly took the form of a malignant lymphadenosis. The uniform character of cells, corresponding with the historical picture of lymphosarcoma, the generalized character of this malignant process, the change of the aleukemic blood picture into a leukemic one, and the evidence of a relationship between leukemia and lymphosarcoma were points of interest in the case.

Results of Rammstedt's Operation.—All patients admitted to one hospital unit during the years from 1919 to 1926 were submitted to Rammstedt's operation. The mortality in ninety cases was 40 per cent. Included in the series were fifteen private patients. None of these died. The great difference in mortality rates in the "hospital" and "private" cases, Barling says, is mainly due to earlier diagnosis in the latter cases. If all patients with the disease could be operated on within fourteen days of the onset of symptoms, the mortality would probably not be more than 5 per cent.

Flexner Bacillus Dysentery.—Of seven persons involved in two families, four were infected with a Flexner dysentery bacillus. In one case, the organism was recovered post mortem, and from the other three from the stools during life. Further, the bloods of all four agglutinated the organism recovered, as well as standard strains of *B. dysenteriae* Flexner. In all except the two fatal cases, the bloods were examined by Warren for the presence of agglutinins of *B. enteritidis* Gaertner and *B. aertrycke,* but always with negative results. The bacillus isolated from all these sources invariably gave the reactions and showed the general characters of *B. dysenteriae* Flexner. When tested against the Oxford Flexner type serums, they gave uniformly similar results. The outbreak showed this dysentery bacillus to be specially virulent for children and the aged, and it was fatal to two children after a very short illness. Full grown adults appeared not to be affected.

Schultz-Charlton Reaction.—In 132 cases tested by Blake, there was blanching in ninety-seven (72.5 per cent). Thus, in 27.5 per cent of cases of undoubted scarlet fever, blanching failed to occur with specific serums. But in considering these figures, it must be pointed out that in a number of cases only high dilutions were used. If only those patients are considered who were injected with undiluted or 1 in 10 serum, the percentage of negative reaction falls to 22 per cent. Another factor to be borne in mind is the "age" of the rash. A rash that has been present three days is less likely to react than on its first appearance. All patients tested on the fourth day gave negative reaction, and it seems probable that the reaction can very rarely be obtained on or after the fourth day. The average interval before blanching occurred was fourteen and a half hours, the shortest time being six and a half hours. In two cases, blanching did not occur until at least thirty-six hours after the injection. Normal horse serum was used as a control in amounts varying from 0.2 to 1.0 cc. in seventeen cases, and no blanching occurred.

Practitioner, London

119: 137-204 (Sept.) 1927

Litholapaxy. T. C. Evans.—p. 137.
Nasal Affections in Childhood. D. Guthrie.—p. 147.
Diagnosis of Subacute Abdomen. P. L. Giuseppi.—p. 154.
Short Hospital Convalescence Following Common Abdominal Operations. G. Robertson.—p. 162.
*Adiposity of Pituitary and Thyropituitary Origin in Adult. J. L. Masterman-Wood.—p. 165.
*Vaccine Treatment of Chronic Arthritis. K. Stone.—p. 176.
Gout. W. H. T. Winter.—p. 185.
*Motor Arm. H. S. Gaskell.—p. 190.

Adiposity in Adult.—Clinical pictures of adiposity associated with pituitary and thyropituitary hyposecretion in the adult are described by Masterman-Wood, and typical cases exemplifying these dyscrasias, together with essential laboratory observations, have been given. It would appear that desiccated postpituitary extract does not exert specific effects when taken by mouth, that when administered intramuscularly it corrects the metabolic disturbance associated with its particular hypofunction, and that in early cases of dystrophia adiposogenitalis it may stimulate, in addition, the pars anterior and, thus, the gonads to renewed functional activity.

Vaccine Treatment of Chronic Arthritis.—The type of case in which Stone says vaccine therapy is likely to be of most value is the early case of rheumatoid arthritis. When the infective focus is still present and is accessible to bacteriologic investigation, an autogenous vaccine prepared from streptococci isolated should be used in addition to removal of the focus. When no infective focus can be found, a mixed stock vaccine should be used.

Motor Arm.—This condition, according to Gaskell, is caused by the current of air which is deflected by the windshield back into the car and makes a semicircle, the rear end of whose arc impinges directly on to the back of the driver's torso. This point corresponds with the emergence of the fourth, fifth, sixth, seventh and eighth cervical nerves; hence trouble on one side or the other often ensues. Both anterior and posterior divisions of these nerves are affected, the anterior, forming the brachial plexus, giving rise to the arm symptoms, and the posterior, piercing and spreading among the fibers and aponeuroses of the splenius and trapezius muscles, being responsible for the initiatory "stiff neck" and shoulder pains. The patient wakes in the morning with what he takes to be an ordinary "stiff neck," but in about eight hours is disagreeably undeceived as to the nature of his complaint. The shoulder aches badly, and the arm then takes on a heavy, continuous pain which extends to the hand and is variously described as "an aching right in the bone," "the gnawing of a tiger," and "rats biting the bone." If it is a true neuritis, sooner or later the patient will complain of tingling and numbness, these being more common in the hand and forearm, the former involving the whole hand and the latter being usually confined to the area supplied by the terminal branches of the median nerve in the thumb, first and second fingers. If it is a perineuritis, these will be absent, but the pain will be no less severe. This "pins and needles" sensation is often an end-symptom, the disease dying hard and making its presence felt to the last by this means in various parts of the

limb. Actual movement and use of the arm, unlike the case of strains and muscular affections, though detrimental to recovery, does not seem to cause much exacerbation of the pain at the time of movement, though it may do so very shortly afterward. Writing may be painful or impossible. For the severer cases, rest in bed is essential. Heat should be applied to the arm. All active stimulation, such as vigorous rubbing and movement, should be avoided.

Acta Dermatologica, Kyoto, Japan

10: 1-120 (July) 1927

Value of Intravenous Injections of Physiologic Sodium Chloride Solution After Operation. S. Shimomura.—p. 44.
So-Called Shin Skin Disease in Coral Islands of South Seas. T. Matsunaga.—p. 58.
*Experimental Syphilis in New-Born Rabbits. S. Shimoda and M. Honda.—p. 74.
*Existence of Autolysin in Blood of Syphilitic Patients. I. Asai.—p. 77.
Serochemical Study of Experimental Syphilis. K. Fujita.—p. 89.
Frambesia: Papules on Mucosa: Three Cases. M. Hashikuchi.—p. 95.

Experimental Syphilis.—Experiments made by Shimoda and Honda suggest that the result of syphilitic infection differs according to the method of inoculation. Thirty-three new-born rabbits were inoculated with syphilis either intravenously or subcutaneously in the genitals, with the result that in eleven cases there was clinical manifestation of syphilitic changes. Of ten new-born rabbits receiving virus inoculation intravenously, five developed syphilitic infiltration in the nasal bones on both sides after an average incubation period of forty-two days. Two of these presented, in addition, syphilitic changes in the prepuce and anal regions. Of twenty-two rabbits receiving cutaneous inoculation in the genitals, five developed syphilitic lesions in the genitals (either in labium major or prepuce) after an average incubation of thirty days. One later developed keratitis parenchymatosa without presenting any local lesion. In these six animals, no change developed in the nasal bones or in the anal region.

Autolysin in Blood of Syphilitic Persons.—Experiments made by Asai show that there did not exist any traces of "autolysin" in the blood of nonsyphilitic persons, syphilitic patients in the primary and secondary stages, and the sufferers from latent syphilis; while one out of four cases of hereditary syphilis, one out of fourteen cases of tertiary syphilis and two out of six cases of metasyphilis proved positive.

Japan Medical World, Tokyo

7: 191-223 (July 15) 1927

Morphology of Virus of Contagious Peripneumonia of Cattle (Demonstration). T. Taniguchi.—p. 191.
Histologic Explanation of Effect of Parenteral Injection of Tooth Cell-Ingredients on Construction and Development of Teeth. M. Shibata.—p. 191.
*Heredity of Blood Groups. T. Furuhata.—p. 197.

Heredity of Blood Groups.—The fundamental idea of Furuhata of the heredity of blood groups, based on data obtained by the test of 958 families, involving 3,951 persons (children 2,035), is as follows: The blood group of a man consists of two allelomorphs, one of which is inherited from his father and the other from his mother (the law of combination of two allelomorphs). On being inherited, the human blood group segregates into two heredity units (the law of segregation). The heredity units of the human blood groups are ab, Ab and aB. The heredity characters of the blood cell and those of the serum are inherited in couples (law of three heredity units of blood group). The heredity of the human blood group is not sex-linked. The human blood groups consist of three homozygotes and three heterozygotes. Their combinations number twenty-one. They are divided into three groups: A, the combination of homozygote and homozygote; B, the combination of homozygote and heterozygote, and C, the combination of heterozygote and heterozygote. As regards heredity units, the blood of a man is handed down from his ancestors. Two allelomorphs which form the blood group of a man are inherited from his parents, and one of the two allelomorphs is handed down to his children. Accordingly, it may be said that the parents always have the two allelomorphs of their children, and the children always have the two allelomorphs of their parents (law of continuity of allelomorph).

Annales de l'Institut Pasteur, Paris

41: 803-918 (Aug.) 1927

Tetanus Anatoxin and Active Immunization of Man Against Tetanus. G. Ramon and C. Zoeller.—p. 803.
Tetanus Anatoxin and Prophylaxis in Domestic Animals. G. Ramon and P. Descombey.—p. 834.
*Tetanus Anatoxin and Antitetanus Immunity in Mother and New-Born. L. Nattan-Larrier et al.—p. 848.
*Passage of Antigens and Antibodies Through Placenta. L. Nattan-Larrier et al.—p. 862.
Passage of Toxins, Anatoxins and Antitoxins Through Walls of Digestive Tract. G. Ramon and E. Grasset.—p. 868.
Stability and Antitetanus Immunity Effected by Anatoxin. C. Zoeller.—p. 879.
Bacteriophagy. E. Wollman.—p. 883.

Tetanus Anatoxin and Antitetanus Immunity in Mother and New-Born.—Rabbits and guinea-pigs were used in the experimental work of Nattan-Larrier, Ramon and Grasset. The specific immunity acquired by the female in gestation under the influence of injections of tetanus anatoxin is transmitted to the young. On the day of birth, the blood of the new-born animals contains tetanus antitoxin in a quantity equivalent to or slightly inferior to that of the mother. This immunity is passive and is prolonged up to two months after birth. The very young rabbit may be actively immunized either by injection or by ingestion of tetanus anatoxin. Immunity obtained by subcutaneous injection of anatoxin is far superior to that obtained by the oral route, especially when the large quantities of anatoxin used in the last method are considered. The addition of such products as tryparsamide or trypoxyl to the anatoxin does not injure antitetanus immunity. On the contrary, immunity seems to be favored thereby to a certain degree, less, however, than by the addition of tapioca. Immunity in the new-born infant is passive, due to the passage of the maternal antitoxin through the placenta. The infant, subjected to injections of tetanus anatoxin is capable of developing a specific active immunity, which is, however, weaker than that developed in adults with proportionately smaller quantities of anatoxin.

Passage of Antigens and Antibodies Through Placenta.—Toxins and anatoxins do not cross the placenta in experimental conditions closely resembling natural conditions. In using abnormally large doses of tetanus toxin, a relatively very small amount could be made to pass from mother to fetus, and this only in the guinea-pig. On the other hand, antigens, antibodies, even heterologous antitoxins, are not stopped by the placenta. This explains the passive nature of the immunity transmitted to their young by females vaccinated with tetanus or diphtheria anatoxin. The placental ectoderm allows passage to only certain antigens and antibodies. This impermeability for antigens without cells, such as toxins and anatoxins, seems still more remarkable when it is recalled that certain pathogenic viruses can penetrate the placental tissue, and traverse it more or less easily. It must be that the viruses reach the fetus only under abnormal conditions.

Archives Médicales Belges, Brussels

80: 401-448 (Aug.) 1927

War Surgery. Maisonnet.—p. 401.
*Tumors of Urachus. Voncken and Cambresier.—p. 420.

Solid Tumors of Urachus.—Two such cases are added by Voncken and Cambresier to the twenty cases already on record. Of these, eighteen were malignant. The first case here reported is that of a woman, aged 40. The tumor was the size of an orange, situated three fingerbreadths below the umbilicus and not adherent to the skin. The clinical diagnosis was tumor, probably of the mesentery. The tumor was easily enucleated except at its top, where it was firmly attached at the median line. Histologic examination was not made. In the second patient, aged 30, the tumor was a fibrosarcoma and prognosis was reserved.

Écho Médical du Nord, Lille

31: 458-470 (Aug. 27) 1927

*Internal Secretion of Ovary and Intellectual Activity. P. Combemale and H. Demacon.—p. 458.

Internal Secretion of Ovary and Intellectual Activity.—A very extensive review of the literature leads Combemale and

Demacon to conclude that oophorectomy is often followed by disturbances in the psychic sphere, the memory, disposition and sexual instinct being affected. Results of examination by questionnaires of fourteen patients seem to show that judgment, imagination, and love are not in direct relation with the ovarian secretion, or at any rate, are faculties which, arrived at maturity, cannot be influenced directly by suppression of the sexual endocrines. In three instances, interest in daily work was greatly diminished. The psyche was affected in 92 per cent of the cases. Disposition, memory, emotivity, attention, will and fatigability are particularly affected, and, in degree, in the order mentioned. The mechanism of the disturbances of disposition and emotivity is as follows: suppression of ovarian secretion, disturbance of function of the sympathetic system, disturbances of disposition and emotivity. The other modifications of psyche seem to come from a lessened activity of the nerve cell, because of absence of a probably direct stimulating action on its protoplasm.

Gazette des Hôpitaux, Paris

100: 1133-1148 (Aug. 27) 1927

Hypoglycemic States. M. Sendrail and J. Planques.—p. 1137.
*Injection of Drugs into Right Heart in Pulmonary Disease. Cherechewski. —p. 1140.

Injections of Drugs into Right Heart in Pulmonary Disease.—Animal experiments with injection of drugs into the right heart were encouraging. The treatment might be valuable, Cherechewski believes, in pneumonia, bronchopneumonia and pulmonary gangrene. A microbic disease could best be combated with microbicidal dyes. The substances to be used might include arsenobenzols, colloidal iodine, silver, iron, manganese, gold, rhodium, phosphorus, fluorine, tuberculin and pilocarpine nitrate, all having dyes (methylene blue, acriflavine, etc.) as a fixative vehicle.

Presse Médicale, Paris

35: 1009-1024 (Aug. 17) 1927

*Decubitus in Treatment of Congestive Hemoptysis. L. Bard.—p. 1009.
Lower Border of Heart After Pneumoperitoneum. A. Rouslacroix and A. Roybaud.—p. 1010.

Decubitus in Treatment of Congestive Hemoptysis.—Severe hemorrhages in tuberculosis come about through ulceration and consequent rupture of an important blood vessel or through vasodilatation. In both cases, absolute rest with dorsal decubitus is prescribed. The choice of decubitus may be a matter of secondary interest in hemoptysis from rupture, but in the second type lateral decubitus on the affected side maintains and aggravates the hemorrhage, while decubitus on the opposite side combats it and often brings about its speedy termination. A case illustrative of this point is described.

Revue Française de Pédiatrie, Paris

3: 409-600 (Aug.) 1927

*"True Athrepsia"; Prognosis. P. Rohmer.—p. 409.
*Dehydration and Choleriform Syndrome. P. Corcan and F. Klein.—p. 416.
*Cerebromeningeal Lesions of New-Born Connected with Labor. R. Waitz. —p. 434.
*Gaucher's Disease in Infants. C. Oberling and P. Woringer.—p. 475.
Tetany of Bladder. P. Rohmer and L. Géry.—p. 533.
Cardiac Disturbances in Spasmophilia. F. Klein.—p. 539.

"True Athrepsia" and Its Prognosis.—Given favorable conditions, the majority of infants with "true athrepsia" can be cured. Seven illustrative cases in which breast milk and buttermilk constituted the diet are reported by Rohmer. All recovered. The name "true athrepsia" should be reserved for the cachexia appearing after digestive disturbances, excluding simple inanition and denutrition due to infections.

Dehydration and Choleriform Syndrome.—Concentrated nourishment, with restriction of water, provokes in infants a state of dehydration, characterized by agitation which may go as far as convulsions, fever, loss of weight, sometimes slackening of the capillary circulation, glycosuria, cylindruria, leukocyturia. This state of dehydration is clinically distinct from the choleriform syndrome. It presents neither digestive disturbances nor coma. Dehydration is not the cause of the choleriform syndrome. Acidosis, always present in cholera infantum, was absent in the author's cases of dehydration. Acidosis of cholera infantum is not, then, due either to dehydration or to slowing of the capillary circulation.

Cerebromeningeal Lesions of New-Born Due to Labor.—Vasodilatations, which may form venous aneurysms, serous or sero-albuminous edemas and hemorrhages, dependent on labor, may occur in the subarachnoid space, in the chord itself, in the cerebral ventricles and in the choroid plexus. The lesions are everywhere diffuse. In the meninges sero-albuminous suffusion brings about "acute edema of the meninges." In hemorrhagic foci and in certain venous lakes, only disintegration of the erythrocytes is observed; an aseptic meningitis may develop. This meningitis, like serous meningitis, appears almost immediately and reaches its maximum at about the eighth day. At this stage, the albuminous edema is important. The sequelae are of four kinds: albuminous pachymeningitis, suppression of the circulation in certain regions, destruction of parenchymatous tissue zones (accessory), and choroid lesions. They also play an important part in the causation of obstetric encephalopathies and certain types of hydrocephalus.

Gaucher's Disease in Infancy.—Six cases of Gaucher's disease in the infant have been reported in the literature. Oberling and Woringer report four more, all in the same family. The very pronounced splenohepatomegaly is accompanied by a nervous syndrome characterized by a diminution of psychic functions, by muscular hypertonia and by increased reflexes. The head is held in forced extension, the body in opisthotonos. The anemia, hemorrhagic diathesis and abnormal pigmentation of the skin encountered almost uniformly in the adult and in the older child, are almost entirely lacking in the infant. In a few months, complete idiocy, decerebrate rigidity and extreme cachexia develop. Death occurs before the end of the first year of life. The disease is familial but not hereditary. Puncture of the spleen is indispensable for diagnosis during life. It reveals the existence of the Gaucher cell. It is suggested that splenectomy be done.

Rev. Med. de la Suisse Romande, Geneva

47: 577-792 (Aug. 25) 1927

*Physical Therapy of Poliomyelitis. P. Duhem.—p. 577.
*Serotherapy of Myelitis. G. Etienne.—p. 603.
Orthopedic Treatment of Infantile Paralysis. P. Nicod.—p. 655.
*Etiology and Prophylaxis of Bronchopneumonia. A. Dufourt and P. Sédallian.—p. 690.
Specific Treatment of Infantile Bronchopneumonia. H. Grenet.—p. 758.

Physical Therapy of Poliomyelitis.—During the febrile period, serotherapy should be used. After the temperature has fallen, the patient should be given two series of roentgen-ray treatments of four sittings each; diathermy is given every second day for two months, then after six weeks of rest another two months' series is given, and so on during the whole period of retrogression of the disease; warm local baths are given four times a day, or six times if the circulatory disturbances are premature and accentuated; manual mechanotherapy is resorted to according to the muscular localizations. In the period of systematized paralyses, after circulation has been reestablished, stimulation by continuous current, with negative terminal connected to a pad of absorbent tissue, is made. Periods of treatment should be alternated with periods of rest. There is definite disappearance of the trophovascular disturbances, atrophies and bone shortening, with maximum muscular restoration.

Serotherapy of Myelitis.—Etienne concludes from his own experience and from a survey of the literature that serotherapy has established the identity of different types of acute myelitis. All these clinical forms are brought to recovery by antipoliomyelitic serotherapy. The lesions remain specific longer than has been thought, and the destructive lesions are quite late. The results of Netter's method were remarkable in the author's cases. The antipoliomyelitic serum prepared at the Pasteur Institute has shown a constant action in the various forms of myelitis. When the doses are sufficiently large and given early, one may expect arrest of evolution, and retrogression of the paralyses. Serotherapy should be begun as soon as possible in the development of the myelitis, since bulbar symptoms may suddenly appear. The earlier the treatment, the smaller the doses needed. At the stage of stabilization, the serum still seems to be active. The author's treatments, begun at the thirty-sixth and sixtieth days, were

followed by complete success. He injected from 80 to 100 cc. intramuscularly in the first twenty-four hours. This dose is repeated during the following days until improvement is evident, when the dose may be decreased to 40 cc. Lacking antipoliomyelitic serum and the means of preparing serum from old patients, one may use mild shock, or nonspecific serotherapy until the arrival of the specific serum.

Etiology and Prophylaxis of Bronchopneumonias.—Antipneumococcic therapy has, in general, a favorable action on bronchopneumonias. It is, however, not dependable. Antistreptococcic therapy has not stood the test. A study of statistics shows that vaccinotherapy has reduced the mortality by nearly two-thirds. This article is a review of the literature.

Schweizer. med. Wochenschrift, Basel

57: 801-828 (Aug. 20) 1927

Relation of Thyroid to Functions of Other Organs. L. Asher.—p. 802.
Goiter Question. E. Bircher.—p. 803.
*Does Thyroid Yield Iodine to Blood? F. Blum.—p. 808.
Ligature of Inferior Thyroid Arteries in Exophthalmic Goiter. P. Clairmont.—p. 813.
Kocher's Sound with Right Angle Tip. P. Clairmont.—p. 814.
Surgically Important Variations of Thyroid Arteries. C. Henschen.—p. 814.
Iodine Poisoning and Female Genital System. P. Hüssy.—p. 818.
Kocher's Goiter Operation. A. Kocher.—p. 820.
*Alpine Goiter and Coast Goiter. O. Lanz.—p. 825.

Does the Thyroid Yield Iodine to the Blood?—Blum's present researches confirm and extend the work previously done by himself and Grützner. Dogs were given a single dose of 0.5 Gm. of potassium iodide to enrich the iodine content of the thyroid, after which care was taken to exclude them from any possible access to iodine. The blood of these animals, examined after a sufficient length of time on the iodine-free diet, was free of iodine. One lobe of the thyroid was removed early in the experiment, the second after several weeks. The second contained approximately as much iodine as that first removed. This experiment indicates that the normal thyroid is tenacious of its iodine and does not readily yield it up to the blood, even when the latter is deprived of an alimentary supply. Examination of the thyroids of goitrous dogs showed that the goitrous thyroid had lost a large part of its capacity to retain its iodine. A further change in iodine metabolism, which would result in iodine improverishment of the goitrous thyroid, might be the loss of its specific power of splitting off iodine from alkali iodide. He examined eighty goiters removed from patients who had been under iodine treatment. In cases with symptoms of myxedema, the percentage of iodine in the thyroglobulin was extremely low. Thyroid structure and colloid were recognizable. It may be assumed that in these goiters the capacity to attract and utilize alkali iodide had been in large measure lost. In another group, the power to use administered iodine had been present, but they had evidently not been able to retain the albuminous iodine substance elaborated. The patients who had had these latter goiters had all exhibited thyrotoxic symptoms. As to the therapeutic value of administered iodine, goiters which still possess the power of splitting off iodine from alkali iodide may benefit from occasional administration of iodine preparations, but it should not be continuous. Goiters that cannot make use of the iodine brought to them by the blood are unaffected by iodine treatment. As to the prophylactic use of iodine, the normal thyroid keeps so tight a grasp on every particle of iodine that comes to it that a deficiency in iodine begins only after goitrous degeneration has set in.

Alpine Goiter and Coast Goiter.—Goiter in Holland is struma diffusa and is more likely to be accompanied by toxic symptoms, which in Switzerland are the exception. The conversion of a simple into an exophthalmic goiter is rare in Holland. In Switzerland there is more often—occasionally after abuse of iodine—simple goiter with the completely developed disease picture superadded. Hypothyroidism more frequently accompanies the Swiss, hyperthyroidism the Dutch goiter. In the Dutch goiter, dyspnea, stridor, hoarseness are rare, because local pressure by a circumscribed node and displacement of the trachea are relatively rare. Simple congenital goiter, not uncommon in Switzerland, does not appear in Holland. In Switzerland, goiter usually appears in the first decade of life: in Holland, in the second. The author advises girls coming to Switzerland for a visit not to drink unboiled water or to eat uncooked vegetables. There is a notably increased proportion of goiters in Utrecht. In Switzerland the simple goiter goes hand in hand with cretinism; in Holland, the very rare cretins present, not simple goiter, but thyroid atrophy.

Annali d'Igiene, Rome

37: 497-568 (Aug.) 1927

*Destruction of Dead Bodies. G. Alessandrini.—p. 497.
*Prevention of Measles. T. Pontano and C. Alba.—p. 515.
Sanitary Conditions of Housing at Turin. G. Sangiorgi.—p. 532.
Toxicity of Wood Alcohol. M. Pantaleoni.—p. 537.
Conservation of Bacterial Strains. N. Sette.—p. 542.

Rôle of Insects in Destruction of Dead Bodies.—Alessandrini studied conditions in various Italian cemeteries and then performed experiments with guinea-pigs buried as human beings are. All his observations bear out the rôle of ground insects in the destruction of corpses. They may act either directly, or by spreading putrefying germs. For economic and health reasons metal coffins should be forbidden. The box should allow the entrance of insects in their young and larval stages and block the exit of adult forms. Wire mesh might be used for this purpose. A system of air ventilation and filtration should also be installed to prevent the diffusion of obnoxious gases. By hastening decomposition of buried bodies, the area devoted to cemeteries might be much curtailed.

Horse Serum in Prevention of Measles.—In four children's homes, serum prophylaxis proved successful in controlling epidemics of measles. Out of 167 children inoculated, only five contracted the disease from eight to thirty-three days after the inoculation. An interesting fact is that normal horse serum seemed to be practically as efficient a preventive as convalescent's serum. Of 125 children inoculated with convalescent's serum, only two became sick, while out of forty-two who received horse serum under identical conditions, three contracted an attenuated form of measles. The dose of horse serum varied from 5 to 10 cc. Horse serum seems, therefore, to be as valuable for protection against measles as convalescent's serum, adult's serum, serum of monkeys injected with measles products and serum of goats inoculated with diplococci. Seven patients who received diphtheria antitoxin were protected against measles through the action of the horse serum.

Difesa Sociale, Rome

6: 1-36 (Aug. 5) 1927

Cause of Goiter. U. Cerletti.—p. 6.
*Goiter in Italy. G. Muggia.—p. 13.

Spontaneous Decrease of Goiter in Italy.—Muggia reviews official figures for recruits in the army to show that in the last twenty-eight years there has been a marked decrease in the goiter rate. Thus in the goitrous province of Sondrio, the rate has decreased from 2.41 per cent in the seven year period of 1899-1905 to 0.81 in the period 1920-1926. In 1927, no thyroid removed in the Sondrio Psychiatric Hospital weighed more than 40 Gm., while in 1912-1914 more than half weighed more than 50 Gm., quite a number exceeded 100 Gm. and some 200 Gm.

Policlinico, Rome

34: 1099-1134 (Aug. 1) 1927

*Identification of Meningococcus. T. Pontano.—p. 1099.
Calculous Hematuria. M. Montanari.—p. 1101.
Radioscopy of Chest. P. Cignolini.—p. 1104.

Rapid Identification of the Meningococcus.—The method suggested by Pontano is based on the "nascent agglutination" applied by Bandi to the diagnosis of cholera. Six tubes are arranged, each filled with 2 cc. of broth or, even better, sterile sodium chloride solution. Then agglutinating serums for the A, B, C, D types and horse serum are added, respectively, to the first five tubes. The sixth tube serves as a control. Thus the organism is grown and identified simultaneously. If agglutinating serums are not at hand, the ordinary therapeutic ones may be substituted.

Archivos Brasileiros de Medicina, Rio de Janeiro

17: 659-739 (July) 1927

Transvesical Prostatectomy. F. de Niemeyer.—p. 659.
*Lumbar and Cistern Puncture. W. Pires and H. Póvoa.—p. 671.
Pulmonary Stasis. Mendonça Castro.—p. 678.
Vitamins or Organic Sulphur. A. Florence.—p. 681.
New Colloidal Test. H. Póvoa and Cerqueira Luz.—p. 694.

Cistern and Lumbar Puncture.—As the cell and albumin figures vary in the cisternal and lumbar fluid, the two punctures cannot be used as substitutes, one for the other, at least pending further standardization. After trying the suboccipital method more than 150 times, Pires and Póvoa hold that its clinical advantages, simplicity, and lack of unpleasant sequelae entitle it to preference. This route can also be used for therapeutic purposes. Further study must be made of the cisternal fluid, as in six normal subjects it exhibited from 0 to 6 lymphocytes per cubic millimeter and less than 0.07 Gm. of albumin per thousand.

Arch. Esp. de Enf. del Aparato Digestivo, etc., Madrid

10: 513-576 (Sept.) 1927. Partial Index

*Borax in Diseases of Stomach. J. García Espin.—p. 513.
Surgery of Digestive Tract. F. Gallart Monés.—p. 516. C'cn.
Therapeutic Progress in Digestive Conditions. J. M. Rosell.—p. 528. C'td.

Borax in Gastric Disease.—The therapeutic action of sodium bromide and sodium borate in epilepsy led Fernández Martínez to try its value in diseases of the stomach, especially with increased acidity. García now reviews the favorable results in such cases. The dose was usually from 2 to 3 Gm. of sodium borate, dissolved in water (1:150 or 1:200) per day. Each ten-day course was followed by an eight-day rest. Pain and acidity decreased almost immediately.

Memorias do Instituto Oswaldo Cruz, Rio de Janeiro

20: 1-175, 1927. Partial Index

*Pulmonary Carcinoma. C. Magarinos Torres and A. Penna de Azevedo.—p. 5.

Primary Pulmonary Cancer.—A review by Magarinos and Penna of the 1,531 necropsy records of the pathologic section of the Oswaldo Cruz Institute disclosed 107 cases (6.98 per cent) of malignancy. Of the ninety-nine (6.46 per cent) carcinoma cases, three were primary in the lung, i. e., 3.09 per cent of the carcinoma group and 0.195 per cent of the total. They were not associated with tuberculosis nor with marked anthracosis.

Rev. de Higiene y de Tuberculosis, Valencia

20: 173-200 (July) 1927

Tuberculosis Vaccination. J. Chabás.—p. 173.
*Transmission of Tuberculosis to Guinea-Pigs. J. Ferrán.—p. 180.

Communicability of Tuberculosis by Contact.—Perla stated recently that normal guinea-pigs caged with tuberculous guinea-pigs readily contract tuberculosis. Ferrán takes issue with such statements, claiming that in more than thirty years devoted to the study of tuberculosis, he has often seen the opposite occur. The animals must, of course, receive the proper food and plenty of bran.

Archiv für Kinderheilkunde, Stuttgart

82: 1-80 (Aug. 5) 1927

Paratyphoid in Infants. O. Ulmer.—p. 1.
*Diagnosis of Ascariasis by Fülleborn's Cutireaction. H. Brüning.—p. 6.
Combined Active and Passive Immunization Against Diphtheria. H. Opitz and G. Meyer.—p. 11.
Kretschmer's Constitutional Types in Children of School Age. W. S. Krasusky.—p. 22.
*Prevention and Treatment of Whooping Cough by Vaccines and Ether. F. von Bernuth and P. Hannemann.—p. 33.
Effect of Physical Exercise on Development of Children and Young Adults. E. Schlesinger.—p. 39.

Diagnosis of Ascariasis by Fülleborn's Cutireaction.—Brüning found that Fülleborn's cutireaction is a valuable aid in the diagnosis of ascariasis. In more than two thirds of the cases in which ascarides were found, and in more than four fifths of the cases in which they were not found the reaction was helpful. The antigen is prepared from pig ascarides.

Ether Treatment of Whooping Cough.—Bernuth and Hannemann failed to get any good results from the intragluteal injection of ether in cases of whooping cough. On the contrary, they noted that paralysis in the tibial and peroneal nerve zones apparently resulted from such injections. Therefore they warn against this treatment of whooping cough.

Deutsche medizinishe Wochenschrift, Berlin

53: 1415-1456 (Aug. 19) 1927

Pathogenesis and Diagnosis of Fluor Genitalis. R. Schröder.—p. 1415.
"Accelerated Reaction" of Early Pregnancy. H. Munter and E. Gräfenberg.—p. 1418.
*Radium Surgery of Mammary Cancer. J. Hirsch.—p. 1419.
Action of Plasmochin in Treatment of Malaria. O. Fischer and W. Weise.—p. 1421.
*Epidemiologic Studies in Crowded Quarters. E. Seligmann and A. Dingmann.—p. 1424.
Diagnosis of Gonorrhea. N. Temesváry.—p. 1426.
Nourishment of Abnormal Infants. E. Rominger.—p. 1428.
Origin of Bakers' Eczema. C. Stern.—p. 1430.
Treatment of Pruritus. C. Bruck.—p. 1431.
Cauterization Treatment of Hemorrhoids and Furuncles. A. Schüle.—p. 1433.
Ictus Laryngeus and Whooping-Cough. H. Bergmann.—p. 1433.

Radium Surgery of Mammary Cancer.—By radium surgery, Hirsch means the direct combination of surgical measures with radium treatment. He reports twenty-two cases; three of these were carcinoma medullare, five scirrhus and fourteen carcinoma simplex. Of twenty-two patients, observed, on an average for three years, twenty-one were cured. Four patients were free from recurrence for from three to five years, seventeen for five years, six for six years. Seven cases were observed for seven years; three of these for ten years. Scar recurrences in these three were treated and after five years there is absolute cure. Among the cured are two with bilateral gland cancer. Two cases inclined toward tumor formation and presented also ovarian tumor.

Epidemiologic Studies in Crowded Quarters.—From their studies, Seligmann and Dingmann conclude that the protective power of scarlet fever serum lasts only three or four weeks, that the incubation period for chickenpox varies between twelve and eighteen days, and that for mumps, generally between sixteen and eighteen days, though it may fall so low as seven days. Vaccination against measles was used with good results.

Klinische Wochenschrift, Berlin

6: 1641-1688 (Aug. 27) 1927

Myopia. F. Poos.—p. 1641.
*Activated Ergosterol in Treatment of Rickets. G. Prinke.—p. 1644.
Synthalin in Treatment of Diabetes. K. Grassheim and H. Petow.—p. 1647.
Nephrogenous Toxins. A. Hartwich and G. Hessel.—p. 1650.
Interfereometric Diagnosis, Particulary of Endocrine Diseases. K. Schwarz and G. Koehler.—p. 1652.
*Results of Serologic Tests for Syphilis in Tuberculosis Sanatorium. R. Klingenstein.—p. 1654.
Influence of Roentgen Ray on Production of Cerebrospinal Fluid. C. Inaba, M. Sgalitzer and E. A. Spiegel.—p. 1655.
Bruck's Active Method of Complement Fixation in Syphilis. H. Gross and E. Krüger.—p. 1657.
Fluoroscopic Study of Action of Intravenous Injections on Stomach. W. Unverricht and E. Freude.—p. 1658.
Treatment of Congenital Syphilis. A. Meyerstein.—p. 1660.
Functional Pathology of Liver. O. Kanner.—p. 1660.
Reply. G. von Bergmann.—p. 1661.
Forgotten Observations on Capillaries. B. O. Pribram.—p. 1661.
Capability of Reaction of Chemically Defined Substances in Anaphylaxis. A. Klopstock and G. E. Selter.—p. 1662.
Besredka's Streptococcus Antivirus. N. Louros and E. Gaessler.—p. 1662.
Death After Blood Transfusion from Donor of "Same" Blood Group. J. Forssman and G. Fogelgren.—p. 1663.
Modern Treatment of Sterility. E. Pribram.—p. 1665. C'td.
Social Aspects of Contagious Diseases of Children. De Rudder.—p. 1668.

Activated Ergosterol in Treatment of Rickets.—Prinke reports seven cases of rickets in infants, treated with ergosterol over varying periods of time. Cases 1 and 2 were given nonactivated ergosterol B for only eight and twelve days, respectively, and yet clinical and roentgenologic improvement was apparent. In the other cases, activated ergosterol was used, and in all there was marked improvement.

Results of Serologic Tests for Syphilis in Tuberculosis Sanatorium.—Of 1,178 serums from patients in a tuberculosis sanatorium, fifty-six gave a positive reaction for syphilis by several methods. In nineteen cases, in which only one reac-

tion was positive, a clinical or anamnesic basis for the diagnosis of syphilis did not exist and they were regarded as nonsyphilitic. In twenty-two of the remaining thirty-seven cases, syphilis was demonstrable either from clinical examination or from the anamnesis. In fifteen of these there was no sign of tuberculosis. In none was the sedimentation speed of the erythrocytes decreased. In nineteen cases there was tuberculous disease along with the positive syphilis reaction. A test for syphilis should be obligatory not only in the general clinic but also for the patients of the tuberculosis specialist. It is recommended that several different tests of one serum be made.

Münchener med. Wochenschrift, Munich

74: 1441-1480 (Aug. 26) 1927

Wound Infection and Abortive Wound Antisepsis. E. von Redwitz.—p. 1441.
Insulin and Cell Permeability. E. Wiechmann.—p. 1447.
Excretion of Greatly Altered Barbituric Acid Compounds with Urine. J. Halberkann and F. Reiche.—p. 1450.
Granulocytes. W. Gerlach.—p. 1452.
*Resection of Upper Half of Stomach. E. Borchers.—p. 1454.
Therapy of Appendicitis and Peritonitis. M. Riedel.—p. 1456.
Squatting Position in Third Stage of Labor. W. Reiprich.—p. 1457.
Impressions of America. F. Müller.—p. 1458. C'tn.

Successful Resection of Upper Half of Stomach.—There are in the literature five or six cases of successful resection of the upper half of the stomach. The author's case was diagnosed as carcinoma of the fundus and after resection of the upper half of the stomach, the esophagus was implanted in the remaining pyloric portion. Any kind of food could be taken without notable difficulty. This procedure preserves life for a time and in some cases the patient returns to health.

Wiener klin. Wochenschrift, Vienna

40: 1069-1096 (Aug. 25) 1927

*Origin of Rickets: Congenital Weakness of Ossification. H. Abels and D. Karplus.—p. 1069.
*Acetonuria in Extra-Uterine Pregnancy. O. Pritzi and J. Lichtmann.—p. 1072.
Action of Synthalin. H. K. Barrenscheen and A. Eisler.—p. 1074.
Toxic Collateral Action of Synthalin. E. Szczeklik.—p. 1075.
*Two-Stage Rupture of Spleen. I. Eisenklam.—p. 1077.
Case of Partial Cardiac Aneurysm. Z. Kalisch.—p. 1078.
Cardiovascular Disturbances and New Function Tests for Insurance. J. Flesch.—p. 1079.
Physiology of Puerperium. L. Kraul.—p. 1081. C'cn.
So-Called Recurrences After Gallbladder Operations. P. Walzel.—p. 1083.
Treatment of Acne Vulgaris. R. O. Stein.—p. 1085.
Therapy of Nephrosclerosis. V. Kollert.—p. 1087.
Uterine Cancer and Pregnancy. H. Katz. Supplement.—pp. 1-15.

Origin of Rickets: Congenital Ossification Weakness.—Infants with congenitally soft skulls are much more disposed to the later development of craniotabes and rickets than those who had at birth completely ossified skulls. Eighty-four per cent of the infants who, when examined by the authors, showed marked rachitic changes had been born with soft skulls.

Acetonuria in Extra-Uterine Pregnancy.—The examination for acetonuria in patients deprived of carbohydrates is one of the most valuable aids in the differential diagnosis of extra-uterine pregnancy. In almost 90 per cent of the authors' cases the test enabled them to make a correct diagnosis. For two days the patient is given a diet rich in carbohydrates; on the test day, carbohydrates are eliminated from the diet, and at 1 p. m., and at two hour intervals thereafter, the bladder is emptied, by means of a catheter, in all, five times. The urine is then examined qualitatively for acetone.

Two-Stage Rupture of the Spleen with Nineteen Day Interval.—The case reported by Eisenklam is one of so-called two-stage rupture of the spleen. The patient, a baker, was taken with severe pains and cramp in the abdomen while at work. There was nausea and vomiting. The pains became localized in the right side of the abdomen and radiated to the right shoulder and right arm. Ninteen days before, the patient had fallen out of bed and struck himself on the right hypochondrium. There had not been severe pain. The spleen was removed and was found to have a 9 cm. gaping tear in the parenchyma. The explanation of the clinical picture was that nineteen days after the rupture the spleen burst its stretched capsule and the blood, etc., escaped into the abdominal cavity. This caused pain and shock. So long as the peritoneum was not seriously involved there had been very little or no disturbance. This interval of nineteen days is the longest reported. Of twelve splenectomies under analogous circumstances reported in the literature, recovery ensued in eight. The present case brings the number of recoveries after splenectomy (thirteen operations reported) up to nine.

Zeitschr. f. d. ges. exper. Medizin, Berlin

56: 535-833 (July 20) 1927

Perfection of Ether Narcosis. F. Starlinger.—p. 535.
Inquiry into Absorption Therapy. H. Bechhold and L. Keiner.—p. 543.
Fractional Estimation of Stomach Contents in Ulcer. L. von Friedrich.—p. 562.
*Precapillary Rhythm. M. Klingmüller.—p. 594.
*Reaction of Hepatic Tissue to Diseases of Gallbladder. I. I. Genkin and J. D. Dmitruk.—p. 633.
*Alimentary Hypercholesteremia with Normal Basal Metabolism. M. Bürger and H. Habs.—p. 640.
Regulation of Hydrogen Ion Concentration in Blood: I. By Nervous System. S. K. Liu and R. Krüger.—p. 648.
Id.: II. By Drugs. S. K. Liu and R. Krüger.—p. 660.
Suspension Stability and Charging of Erythrocytes. M. Schechter and T. Blühbaum.—p. 671.
*Increasing Iodine Content of Cow's Milk. K. Scharrer.—p. 677.
Biologic Method of Determining Degree of Hyperepinephrinemia. M. N. Achutin.—p. 698.
Measuring Hydrogen Ion Concentration of Extremely Small Quantities of Fluids. S. S. Girgolaff and J. J. Schukoff.—p. 710.
Acidosis of Tissues. B. M. Stark.—p. 714.
Uric Acid Metabolism: II. Inflammatory and Vascular Kidney Diseases. H. Lucke.—p. 721.
*Effect of Calcium on Excitability of Vagus. M. Mandelstamm.—p. 734.
Douglas Bag Method of Determining Metabolism. B. Kommerell.—p. 740.
Acid-Base Equilibrium in Renal Diseases. H. Hemmerling and G. Pfeffer.—p. 748.
Serum Albumins in Epilepsy. F. Frisch and E. Fried.—p. 766.
Acid Damage to Heart and Cardiac Remedies. H. Rosencrantz et al.—p. 778.
Action of Human Urine on Heart of Cold-Blooded Animals. A. Solé.—p. 793.
Mechanical Condition of Meat and Pancreatic Secretion. W. H. Gantt and P. S. Kupalow.—p. 802.
*Nonspecific Immune Bodies in Protein Therapy. N. J. Rosanow.—p. 805.
Lactic Acid Excretion in Training. H. Herxheimer and E. Wissing.—p. 812.
Parathormone-Collip. H. Süssmann.—p. 817.

Precapillary Rhythm.—Klingmüller observed rhythmic disturbances in the capillaries of the nail fold in eclampsia, pregnancy, all forms of nephritis, contracted kidney, Raynaud's disease, normal pregnancy and in persons with a vasoneurotic constitution. The reason for this rhythm is not clear.

Reaction of Hepatic Tissue to Diseases of Gallbladder.—In chronic inflammations of the gallbladder Genkin and Dmitruk found an intense productive inflammation of the perivascular and peribiliary connective tissues. In acute gallbladder inflammation similar changes with destruction of liver parenchyma were noted. In some cases individual lobes and large areas of the liver had become necrotic. These clinical observations were checked by experiments on rabbits.

Alimentary Hypercholesteremia with Normal Basal Metabolism.—The ingestion of 5 Gm. of an oily solution of cholesterol or of cholesterol esters by persons with a normal basal metabolism was followed invariably by cholesteremia. After four hours the fat content of the blood serum was increased to from three to four times the normal.

Increasing Iodine Content of Milk by Adding Iodine to Fodder.—Scharrer determined the possibility of raising the iodine content of cow's milk by feeding iodine to these animals. He found that infants who are fed this milk are not deleteriously affected thereby.

Effect of Calcium on Excitability of Vagus.—Mandelstamm asserts that excess of calcium raises and deficiency of calcium lowers the excitability of the vagus under the conditions of his experiments.

Nonspecific Immune Bodies in Protein Therapy.—Rosanow asserts that protein therapy cannot take the place of specific serum and vaccine therapy.

Zeitschr. f. Tuberkulose, Leipzig

48: 193-272 (July) 1927

*Metallic Salts Treatment. L. E. Walbum.—p. 193.
Lodging Control and Prophylaxis of Tuberculosis. F. Klein.—p. 217.
Increased Sweating in Tuberculous. H. Simon and G. Lewin.—p. 220.
*Insulin in Superalimentation in Tuberculosis. S. Schönfeld.—p. 224.

Roentgenology of Cardiac Changes in Tuberculosis. G. Gáli.—p. 229.
Blood Platelet Examination in Tuberculosis. L. Vajda.—p. 235.
Gold Treatment of Experimental Rabbit Tuberculosis. T. Madsen and J. R. Mörch.—p. 237.

Metallic Salts Treatment.—By means of small optimum doses of manganese, Walbum was able to sterilize mice infected with virulent tetanus spores. Rabbits infected with virulent tubercle bacilli by intravenous injection, did not develop tuberculosis when injected with small optimum doses of manganese, cerium, lanthanum or cadmium, not later than seven days after such experimental infection. Similarly infected rabbits were completely cured by injection of cadmium thirty-three days after infection. Cadmium conferred immunity on guinea-pigs infected with tubercle bacilli.

Insulin in Superalimentation in Tuberculosis.—By means of comparatively small doses of insulin, Schönfeld improved the appetite and thus increased the weight of tuberculous patients in the first and second stages of the disease when other methods had failed. In advanced cases he warns that one must proceed with caution.

Zentralbl. f. Chirurgie, Leipzig

54: 1985-2048 (Aug. 6) 1927

*Treatment of Acute Spreading Phlegmon. K. Mermingas.—p. 1986.
Inflation of Renal Pelvis for Radiography. T. Cohn.—p. 1988.
Interpretation of Coagulability of Blood in Diagnosis of Cancer. I. Perlmann and A. Rodin.—p. 1995.
Resection for Gastroptosis. B. Martin.—p. 2003.
Technic of Transduodenal Choledochoduodenostomy. L. Moszkowicz.—p. 2015.
*Removal of Dental Plate from Esophagus. L. Drüner.—p. 2019.
Perforation Peritonitis in Diabetes. E. Melchior.—p. 2020.
Symptoms of Perforation Peritonitis in Diabetes. F. Franke.—p. 2021.
Reply. W. Usadel.—p. 2022.
Dissecting Aneurysm of Brachial Artery. H. Coenen.—p. 2023.

Treatment of Acute Spreading Phlegmon.—Mermingas floods the infected area with warm physiologic sodium chloride solution. The infected tissues are freely incised; a large subcutaneous vein is exposed some distance proximal to the infection, and, with the aid of a 100 cc. syringe, the solution is forced into the vein in a centrifugal direction. This maneuver was always followed by a chill and a febrile reaction. Mermingas did not see any untoward effects. He is very favorably impressed with the results obtained.

Removal of Dental Plate from Esophagus by Roentgenoscopic Method.—The plate measured 3.2 x 2.9 cm. A stereoroentgenogram determined its location at a level between the fifth and the seventh cervical vertebrae. It was removed by introducing a forceps through the mouth under direct roentgen-ray illumination. The total exposure amounted to two minutes and forty seconds. The method has the advantage over the esophagoscopic in allowing more room for the forceps and in permitting the operation to be performed under direct vision. It is safer, consumes less time, and can be carried out either through the mouth or through the stomach.

Klinicheskaja Meditsina, Moscow

5: 571-641 (May) 1927

Early Diagnosis of Uterine Cancer. U. L. Braude.—p. 571.
Diabetes Mellitus and Insulin. E. U. Zukerstein.—p. 580. C'cn.
Tumors of Male Genital Organs. C. M. Rubasheff.—p. 588.
*Quinine Treatment of Malaria. H. E. Tchuchin.—p. 594.
Epidemiology, Symptoms and Therapy of Tertiary Form of Malaria. E. D. Belajava.—p. 606.
Curability of Malarial Infection. A. M. Liachovetskiy.—p. 615.
Treatment of Huge Spleens in Chronic Malaria of Children. A. A. Kisel.—p. 620.
Treatment of Malaria with a Quinine Mixture. A. I. Dobroluboff.—p. 620.
Treatment of Diabetes Insipidus. L. I. Fogelson.—p. 621.

Quinine Treatment of Malaria.—Tchuchin points out that with systematic quinine treatment, rigidly carried out, the percentage of recurrences may run as high as 25. The failure of quinine therapy in these cases is due to the lipoid content of the cell membrane of the erythrocytes as well as to the large size and rich fat and lipoid content of the sexual forms of the parasite. The particular resistance to quinine of the tropical crescents is due to the particular quality of their fatty and lipoid substances. To be effective, quinine salts should possess a ready solubility in lipoids. Combination of quinine or of its salts with organic diluents will give the best results. The latter will act as ferments or catalyzers. New studies should be directed toward the solubility of quinine in lipoids and toward organic diluents.

Russkaya Klinika, Moscow

7: 823-964 (June) 1927

Mineral Metabolism in Individual Fasting Two Weeks. P. Gladstein.—p. 823.
Influence of Glands of Internal Secretion on Active Reaction and Alkali Reserve of Blood. S. Kaplanski.—p. 832.
Effect of Calcium Chloride and Magnesium Chloride on Duodenal Secretion. A. T. Gefter.—p. 838.
Pulmonary Suppuration. S. P. Vinogrodoff.—p. 853.
Obstructive Thrombus of Abdominal Aorta. V. F. Tchervakoff.—p. 860.
Effect of Sodium Bicarbonate Enema on Secretory and Motor Functions of Stomach. A. A. Vakar.—p. 870.
*Dietetic Treatment of Certain Forms of Colitis. K. V. Punin.—p. 886.
Study and Treatment of Neurologic Invalids. V. V. Dechterev.—p. 906.
Paralysis Following Acute Arsenic Poisoning. A. I. Ivanchenko.—p. 913.

Certain Forms of Colitis and Their Dietetic Treatment.—Punin lays stress on that form of colitis which is accompanied by gastric achylia. It is frequently on a nervous basis, though more frequently it is one of the early symptoms of latent pulmonary tuberculosis, and is therefore caused by tuberculous toxemia. Dietetic treatment is most important in this form. Because of the frequent association with pulmonary tuberculosis, superalimentation is desirable. He bases the values and the propriety of various foods on the data of the Pawlow school. Milk is poorly borne and should be excluded entirely. Olive oil, given frequently, in small amounts, and butter are valuable. All food must be divided finely and thoroughly cooked. Chopped and broiled meat, vegetable soups, eggs, cereals and toast comprise the diet. He emphasizes the great value of dilute hydrochloric acid. It stimulates secretion of the gastric juice in the first and second phases of digestion, as well as that of the pancreas. He calculates from physiologic data that in the presence of complete achylia, 200 Gm. of food require 30 minims of dilute hydrochloric acid.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

71: 825-896 (Aug. 20) 1927

*Birth Paralysis of Arm. R. J. Harrenstein.—p. 828.
*Internal Secretion of Ovary After Hysterectomy. I. A. Wijsenbeek and S. E. de Jongh.—p. 847.

Birth Paralysis of the Arm.—Harrenstein studied the mechanism of origin of birth paralysis of the arm on the cadavers of seventeen stillborn infants. He concludes that the brachial plexus in the full-term child is easily stretched and torn, particularly at Erb's point. There is especial danger of injury to the nerves of the plexus if the normal distance between the head (the cervical spine) and the shoulder becomes increased during the act of birth. In some cases the phenomena of paralysis are caused by injury to the epiphysis of the humerus. Early recognition of these pseudoparalyses is needful, since treatment would differ from that of true paralysis. The roentgen ray is often useful in diagnosing epiphyseal separation, since the center of ossification in the ephysysis is visible in the roentgenogram soon after birth. Orthopedic measures are discussed. Photographs and diagrams illustrate the article.

Influence of Removal of Uterus on Internal Secretion of Ovaries.—In experiments on mice, Wijsenbeek and de Jongh found that the secretion by the ovary of a hormone regulating the cyclic changes in the genital organs was not altered by removal of the uterus.

71: 897-964 (Aug. 27) 1927

*Treatment of Pernicious Anemia. P. A. Heeres.—p. 899.
Insulin Treatment of Hyperemesis Gravidarum. G. C. Nijhoff.—p. 908.
*Changes in Gasserian Ganglion in Trigeminal Neuralgia. G. O. E. Lignac and L. van der Bruggen.—p. 912.
*Inhibition of Bacterial Growth in Human Serum. L. K. Wolff.—p. 917.
Operation for Lateral Dislocation of Clavicle. J. C. L. M. Stuyt.—p. 925.

Minot and Murphy's Diet in Pernicious Anemia.—Heeres reports success with Minot and Murphy's diet in ten cases of pernicious anemia, which reacted not at all or incompletely to other methods of treatment.

Changes in Gasserian Ganglion in Trigeminal Neuralgia.—In two of the twenty-two cases of trigeminal neuralgia in

which Lignac and van der Bruggen demonstrated changes in the gasserian ganglion, the neuralgia had not previously been treated. In these two cases the changes in the ganglion cells included complete or partial failure to stain, atrophy, disappearance of the cell wall, basophilia of the protoplasm, vacuole formation in the protoplasm, large swollen cells. Perinuclear pigment and perinuclear areola, chromatolysis, karyolysis and capsules from which the ganglion cells had disappeared were also seen. In the nerve fibers the changes included swelling of the fiber and of the medullary sheath and degenerative changes in the nerve vessels. He suggests that in infection of the root of a tooth, micro-organisms or their toxins might invade the perineural lymph sheaths and thus reach the gasserian ganglion, where injury to the cells would give rise to the neuralgic symptoms.

Inhibition of Bacterial Growth in Human Serum.—Wolff found that in human blood serum exposed to light at 37 C. the growth of staphylococci and streptococci was checked for five hours. He connects this fact with the strongly alkaline reaction of serum exposed to light. The application to the care of wounds is obvious. The observation does not hold for colon, typhoid or anthrax bacilli, nor for all animal serums.

Acta Obstet. et Gynec. Scandinavica, Helsingfors

6: 211-347, 1927

*Repeated Pregnancy in Same Tube. R. Hasselblatt.—p. 211.
*Influence of Pregnancy and Parturition on Organic Cardiac Disease. F. G. Jensen.—p. 239. In English.
*Symptoms and Diagnosis of Extra-Uterine Pregnancy. F. Möller.—p. 279.
Case of Mola Tuberosa (Breus' Mole). J. V. Andersen.—p. 293. In English.
*Treatment of Uterine Myoma. I. P. Hartmann.—p. 304.
Two Cases of Ectasia Abdominis Congenita. O. Scheibel.—p. 329. In English.
Total Aplasia of Uterus and Vagina. E. Lindqvist.—p. 337.

Repeated Pregnancy in Same Tube.—The author reports two new cases of recurrent tubal gravidity on the same side. In one of them an incomplete salpingectomy was done at the first operation, only the middle third of the tube being removed. After having passed through a uterine pregnancy with spontaneous labor, the patient was again operated on for tubal gravidity on the same side in the remaining part of the tube. On this occasion the whole tube was removed. In the second case, the patient sustained a tubal rupture, and in this case, too, an incomplete salpingectomy was performed, only the medial portion of the tube, 3 cm. long, being left behind. Two and a half years later pregnancy developed in this tubal stump, and required operation, at which time the whole tube was removed. Such recurrences of tubal gravidity on the same side occur very rarely. Besides his own two cases, the author has collected nineteen, three of which have not been published previously from the point of view of recurrent tubal pregnancy. Two are necropsy cases and seventeen are operative cases. A triple occurrence of tubal pregnancy in the same patient has been seen only twice. The possibility of recurrence of gravidity in the same tube is due to faulty operative technic and disturbance in healing. It is essential, in the author's opinion, to do a complete salpingectomy, with a wedge-shaped excision at the uterine cornu, and to cover the wound carefully with peritoneum.

Pregnancy and Heart Disease.—The divergence of opinion with regard to heart disease in relation to pregnancy and parturition, Jensen asserts, is due to the inconsistency that has always prevailed between the large statistics originating from case reports and those papers which are the result of many years' observation carried out by obstetricians among their own patients. It is as yet very difficult, in the case of a woman with heart disease who has not previously given birth to a child, to determine whether or not she can endure pregnancy and parturition; she must, therefore, be kept under constant supervision from the beginning of her pregnancy. The physician who completes a treatment for heart disease must urge the patient to consult a physician in case of subsequent pregnancy. Pregnancy and parturition in patients with heart lesions are often complicated by a recurrent—toxic—endocarditis and initial cardiac insufficiency, which symptoms, however, never set in suddenly. Independently of the patient's age, the recurrent—toxic—endocarditis is found particularly in patients with more recent heart diseases, and the initial insufficiency in those with older stenoses. Endocarditis and cardiac insufficiency are indications for the interruption of pregnancy, if they do not readily yield to treatment. Particularly during the last four to six weeks of pregnancy, patients with heart disease are exposed to circulatory disturbances. Therefore, artificial premature delivery is more frequently necessary at that time. Subsequent examination of sixty-two of 119 patients with cardiac lesions, who were delivered during the period from 1919 to 1924, showed that the prognosis for heart disease during pregnancy depends on the patient's being subjected to regular examinations from the commencement of pregnancy, and on intensive treatment after the occurrence of the first symptoms of circulatory disturbance.

Analysis of Extra-Uterine Pregnancy.—Among 190 cases of extra-uterine pregnancy reviewed by Möller, amenorrhea occurred in 56.3 per cent; external bleeding in 91 per cent; abdominal pains in 93.7 per cent, in 16.8 per cent of which they were not acute. In most cases, they occurred before the hemorrhage. The acute pain occurred mostly with rupture, but also to a large extent with tubal abortion. Only 44.2 per cent of the cases showed symptoms of collapse. Of 166 cases, in which the temperature was known, it was subfebrile, or slightly so, in 56 per cent. The most reliable information was afforded by bimanual palpation (93.6 per cent).

Treatment of Myoma of Uterus.—Hartmann gives an account of 309 cases of myoma of the uterus. A summary is submitted of the different modes of treatment and their results. One patient died under roentgen-ray treatment; she was very anemic (hemoglobin, 20 per cent) and had an intrauterine fibroma. Two of the patients who died after operation had previously been treated with the roentgen ray. The mortality in supravaginal amputations was 1.16 per cent.

Ugeskrift for Læger, Copenhagen

89: 803-830 (Sept. 8) 1927

*Nosebleed. G. V. T. Borries.—p. 803.
Blood Group and Pathologic Conditions. O. Thomsen.—p. 808.

Nosebleed.—Borries discusses epistaxis as an important symptom in certain cases of disease of the cardiovascular system, kidneys and liver. It may, he states, be a sign of acute and chronic infections of deep significance. In many of these cases nosebleed may be the first symptom which brings the patient to a physician, who is then responsible not only for arrest of the hemorrhage but for diagnosis and treatment of the disorder involved. Methods of immediate treatment are described.

89: 831-850 (Sept. 15) 1927

*Pityriasis Streptogenes. H. Haxthausen.—p. 831.
*Case of Infectious Mononucleosis. M. S. Andersen.—p. 835.
Method of Localization of Foreign Bodies. T. Eiken.—p. 837.

Pityriasis Streptogenes, a Distinct Entity.—Certain eruptions that have previously been classed under seborrheic eczema differ from the latter, Haxthausen states, in characteristic appearance, localization, and bacteriologic content and constitute a distinct entity. This he calls pityriasis streptogenes. Bacteriologic investigation and clinical examination indicate streptococci as the cause. Cultivation of the streptococci from the skin is made possible by the addition of crystal violet to the culture medium (blood agar). Secondary cases following impetigo do not differ from the primary form. Pityriasis streptogenes occurs chiefly in children between 6 and 14 years of age and is undoubtedly contagious. Zinc ointment is often effective, but zinc ointment with from 1 to 2 per cent of tar or 2 per cent of anthrarobin is the best remedy.

Case of Infectious Mononucleosis.—Andersen describes a case of the so-called monocytic tonsillitis of the German authors and reviews the literature on the subject. He prefers the name infectious mononucleosis, as the tonsillitis is only a secondary symptom and not always present, while the appearance of pathologic mononuclear cells in the blood is the characteristic and only constant symptom.